EDISON ELECTRIC INSTITUTE BULLETIN

DECEMBER, 1941

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EDISON ELECTRIC INSTITUTE

THE ELECTRIC LIGHT AND POWER INDUSTRY

Current Statistical Data Covering 100 Per Cent of Industry

September, 1941

SOURCE AND DISPOSAL OF ENERGY—MONTH OF SEPTEMBER

	1941	1940	%
GENERATION* (Net)			
By Fuel Burning Plants	10,351,185,000	8,129,390,000	+27.3
By Water Power Plants	3,996,637,000	3,854,995,000	+ 3.7
Total Generation	**14,347,822,000**	**11,984,385,000**	**+19.7**
Add—Net Imports Over International Boundaries	73,176,000	75,836,000	− 3.5
Less—Company Use	222,315,000	125,756,000	+76.8
Less—Energy Used by Producer	297,039,000	449,936,000	−34.0
Net Energy for Distribution	**13,901,644,000**	**11,484,529,000**	**+21.0**
Losses and Unaccounted for	1,779,376,000	1,427,900,000	+24.6
Sales to Ultimate Customers	**12,122,268,000**	**10,056,629,000**	**+20.5**

CLASSIFICATION OF SALES

NUMBER OF CUSTOMERS—As of September 30th			
Residential or Domestic	25,735,023	24,723,826	+ 4.1
Rural (Distinct Rural Rates)	974,969	677,173	.....
Commercial or Industrial:			
Small Light and Power	4,286,847	4,249,193	+ 0.7
Large Light and Power	174,351	181,627	.....
Other Customers	117,908	112,842	.....
Total Ultimate Customers	**31,289,098**	**29,944,661**	**+ 4.5**
KILOWATTHOUR SALES—During Month of September			
Residential or Domestic	2,031,692,000	1,891,428,000	+ 7.4
Rural (Distinct Rural Rates)	296,612,000	259,966,000	+14.1
Commercial or Industrial:			
Small Light and Power	2,120,200,000	1,925,776,000	+10.1
Large Light and Power	6,747,359,000	5,115,115,000	+31.9
Street and Highway Lighting	170,231,000	164,701,000	+ 3.4
Other Public Authorities	250,251,000	222,214,000	+12.6
Railways and Railroads:			
Street and Interurban Railways	298,231,000	291,555,000	+ 5.9
Electrified Steam Railroads	168,459,000	150,490,000	+11.9
Interdepartmental	39,233,000	35,384,000	+10.9
Total to Ultimate Customers	**12,122,268,000**	**10,056,629,000**	**+20.5**
Revenue from Ultimate Customers	**$225,751,400**	**$204,434,000**	**+10.4**

RESIDENTIAL OR DOMESTIC SERVICE (Revised Series)

AVERAGE CUSTOMER DATA—For the 12 Months Ended September 30th			
Kilowatthours per Customer	976	936	+ 4.3
Average Annual Bill	$36.70	$36.32	+ 1.0
Revenue per Kilowatthour	3.76¢	3.88¢	− 3.1

* By Courtesy of the Federal Power Commission

Vol. 9, No. 12, EDISON ELECTRIC INSTITUTE BULLETIN; published monthly. Entered as second-class matter Aug. 17, 1933, at the post office at Philadelphia, Pa., under the act of March 3, 1879. Publication office, 56th and Chestnut Sts., Philadelphia, Pa. Editorial office, 420 Lexington Ave., New York, N. Y. Subscription rate $2.00 per year in the United States; $3.00 per year in foreign countries.

The Edison Electric Institute does not assume responsibility for, nor necessarily endorse or approve, statements made by contributors to the BULLETIN.

EDISON ELECTRIC INSTITUTE BULLETIN

Volume 9 DECEMBER, 1941 No. 12

As the Nation Goes to War

Organized Efficiency Is the Electric Industry's Most Valuable Contribution for Victory

IT is fitting, when embarking upon a great adventure, to check the gear and count the stores, with the full knowledge that little can be done to amend these matters when once committed to a course of action. Much has been said since December 7, by way of appraisal of national resources in the face of war, and it may be appropriate to examine the situation of electric utilities with respect to war production economy, as they enter the phase of actual conflict. It will be proper in due course to summarize resources in machines and lines and other plant facilities, in supplies and man-power and technical skill but, above any of these things, account should be taken of the most valuable resource of all, which is the organized efficiency of a going concern.

During the past two years, electric power has been provided in amount more than one quarter greater than in 1939, new and essential loads have been taken on, plant facilities have been augmented proportionately and more, ordinary business has been carried, the needs of consumers have been met and standards of service maintained. All of this has been done in the face of rising costs of supplies, materials, labor and taxes, and in the presence of general labor unrest and of a market for capital funds that was somewhat less than carefree and serene. It has been done without fanfare and without recourse to any special aids external to the industry because, to those who did it, it was an ordinary job: the ordinary job upon which they were engaged and had been engaged for many years.

All of the new machines that have been started to supply electric power, all of the lines that have been built to deliver it, and all of the hundreds of essential facilities and mechanisms that go along with these, have been made workable by men and organizations whose ordinary, regular job for many years has been to run such machines and build such lines and to do it swiftly, efficiently and well. Corporate officers, line gangs, clerks, engineers and operators have long ago learned where the delays and difficulties are to be found for each separate undertaking; they know how to save time and how to save money. Most of all, they have learned from experience how to coordinate the parts into a going, efficient service, without fuss or confusion or lost motion.

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This resource of knowledge, skill and trained judgment, the efficiency and driving power of experience and coordination in a highly technical service is the foremost and most valuable asset possessed by the electric utility industry as it enters the war phase of a production economy whereof, by common agreement, power supply is deemed to be an indispensable element.

Having in mind that more tangible resources would be of little use by themselves without the benefit of this planning and executing efficiency, or at best would be utilized at much less than their full potentialities it is nevertheless timely to appraise these resources as they stand at the threshold of the war.

A great quantity of generating capacity has been added during the past two years and much more is scheduled for 1942 and 1943. With greatly increased peak demands, all of these demands have been met, with one exception in the southeast, with comfortable margins for reserve purposes, taking into account local interconnections available for use as reserve. This is not to say that reserve capacity appropriate for easier times has not been eaten into both generally and more markedly in specific cases. This does no more, however, than to raise the question whether the more generous margins of the depression period were not unduly large; essentially the handling of reserves is a matter of judgment and experience and the test is that of the result. In any case the amount of reserve depends upon maintenance practices, efficiencies, and the particular situation of a utility and its customers so that, in effect, there will be as many rules for an optimum reserve as there are systems.

There is a lively prospect that the output of energy, aside from the maximum load demands upon systems, will be greatly enlarged if full effect is given to the Government's recent demand for 24-hour and seven-day operation of war industries. This may be calculated not to affect the available maximum capacity of electric plants, and might even relieve them slightly, but it will of course raise average load factors and increase the daily output of installed generating capacity. Hydraulic plants depending upon storage will be affected proportionately; in the case of steam plants the principal effect will be the necessity for overhauling maintenance and inspection schedules due to the longer-hours use of the plant.

Supplies of critical materials are already limited by war necessities; other materials will no doubt be difficult to procure due to the dislocation of normal channels of production or distribution.

These difficulties will be shared with all other industrial activities, but, so far as war production is concerned, it is quite evident that the means for producing and delivering electric power needed for war industries, whether new or for the maintenance of existing means, must be kept in step with the war industries themselves, and therefore must benefit by whatever priorities or other measures may be needed to accomplish this.

The situation affecting the ordinary civilian growth of electricity supply is by no means so simple, and in fact it is already subject to fairly severe limitations which will no doubt be increased. It appears to be probable that what new housing there is will be housing for war industries which, together with the materials necessary to serve it, will enjoy a certain degree of priority. Generally it is well understood that housing involves something more than merely providing shelter for war workers, that they must be serviced in some measure. This would imply a normal provision of retail shops, community buildings, cinemas, and so on, in some appropriate ratio to the housing authorized. It is not quite clear just what views the authorities will have in this regard. If there is not to be "business as usual," perhaps there will not be "domestic life as usual." At any rate there appears to be a wide field for close decisions which may very well affect the procurement of materials.

There is still another area in which there appears to be more than an even chance of difficulties affecting the procurement of materials. This relates to the normal use of materials by electric utilities for replacements, betterments, and the less easily definable necessities of adjusting the physical plant to the requirements of the load it serves, that is to say, the requirements of all of its consumers. The prospect of difficulty exists because very few persons, except experienced operators within the industry, appear to have any clear idea of the manner in which these necessities affect the service efficiency of utilities. For example, it may be recalled that, in the depth of the recent depression and in the face of shrinking loads and falling sales, and when utilities certainly did not want to spend an unnecessary dollar, they found it imperative to expend on construction in 1933 more than one sixth (17.7%) of the budgeted construction expenditures of 1941. The reason for this is found in the continual movement and shifting of existing business and the accompanying demand for modifications of the electricity supply plant, within established service areas. This is independent of the requirements of new business, but nevertheless essential to preserve the plant in efficient operating condition.

It appears to be plain that materials will not be available for mere betterments as such, as for the improvement of efficiency or the reduction of expenses, and it appears to be probable that materials may not be available beyond the mere rendering of minimum tolerable service in many cases. The indicated course of action is obvious; thrifty, even parsimonious, use of such materials as may be in hand, and this use only for bare necessities, will be needed until supplies are more readily procurable than they are at present.

There is no serious indication of any shortage of operating supplies, such as fuel, lubricants, and other ordinary supplies most of which are not at present critical. In spite of the general availability of such supplies, suitable precautions may be taken against possible transportation delays, and difficulties of procurement due to the displacement of manufacturing facilities, or labor shortages. Even where materials are available, such as timber products, chemicals for feedwater treatment, and similar supplies, there appears to be an active possibility that they will be difficult to obtain promptly because the establishments that process or fabricate them may be delayed by the intrusion of other and more pressing war contracts.

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The highly trained and experienced personnel of the electric utility industry is one of its principal assets. Although this asset may be threatened with impairment from two directions, namely, through the jurisdictional type of labor disturbance, and through the draft, it appears to be possible that neither of these will result in actual serious damage to the industry. The electric utility industry has an exemplary record of stability of employment, high pay and excellent working conditions, and enlightened labor relations, and it is therefore unlikely that labor difficulties will arise out of any actual conditions within the industry. The jurisdictional type of such troubles may be expected to follow the general trend of such difficulties, which has caused so much concern in industry; there has arisen a general public demand that this situation shall be improved.

The Selective Service Act was designed to disturb industry as little as possible consistent with the objectives of that Act and the necessities of the nation, which is now at war. It is clearly the purpose of the administrative agencies working under the Act not to disturb unnecessarily the functioning of industry. Hence, it is the responsibility of the employers to make information available to these administrative agencies as to what men are necessary in the operation of industry, but at the same time it is the responsibility of these employers, as rapidly as possible, to train replacements for all those qualified for military service. Under present conditions the training of personnel to take the place of men of military age is particularly important. Reports from England indicate the feasibility of using men beyond military age, and women are being employed for many duties where they have not customarily been used before. In the probable event that the demands of the draft will make replacements equally difficult, industry in this country may resort to the same measures.

In the meantime, while carrying out this training operation, electric utilities will probably find it necessary to take appropriate steps in the first instance with local draft boards toward procurement of deferment for certain necessary men. This is not an easy thing to do because it runs contrary to the natural patriotic instincts of employers and men. Nevertheless it is essential that all classes shall take a realistic view of the situation and give due weight to the necessity of maintenance of power supply as a war measure. It appears to be probable that the main difficulty in procuring deferment will be encountered in the zone of job classifications because the customary name in the industry of a particular job may not indicate to one outside the industry the job's critical significance to the operation of a power system. This is preeminently a matter for the decision and judgment of management, taking into account the qualifications of the individual concerned and the time required for the training of replacements as well as their availability.

The point to be emphasized at this time, however, is the provision of replacements, first for men of ages 20 to 28 and then for men of ages 28 to 35.

Since non-defense construction is defi-

INSTITUTE'S COMMERCIAL ACTIVITIES GEARED TO VICTORY PROGRAM

COMMERCIAL activities of the Edison Electric Institute will be directed definitely toward a Victory Program, and reorganization of EEI Sales Committees to this end is now being completed, President Kellogg of the Institute has announced.

How to use electricity in industries so as to speed maximum, efficient production without waste, and to improve quality, will be studied by one of the committees. This committee will also study how to build up system load factors to reduce peak loads and losses on utility systems.

The Institute will give continued assistance to the Sub-contracting and other divisions of OPM.

Under the broad objective of winning the war, commercial studies will aim to stimulate the service phases of utility company operations and to foster a type of advertising which will stress such use of present equipment as will insure a minimum requirement of critical materials. Committees will encourage the repair of present appliances and major equipment so that customers' devices may continue serviceable. Cooperation with other branches of the electrical industry concerned with sales and service of appliances will be sought.

The graver needs that confront the nation affecting both home and industry will require better lighting arrangements. Broader opportunity is given for committees to continue study of lighting applications in industry to increase output, improve products, decrease work and conserve eyesight.

A home service committee will study kitchen rearrangement for labor saving and meal planning to meet the increasing cost of living, while maintaining the maximum nutritive values of food. A farm service committee will study methods and equipment which will give maximum increase in farm production, relief in farm labor requirements and minimize loss in perishable food products.

Committee studies are to be organized also along the lines of research and planning for the post-war period when intensified sales efforts must be relied upon to cushion the economic shock at the termination of the defense program.

At the start of its all-out defense effort, President Kellogg said the United States was fortunate to have an electric power industry which had capacity exceeding that of England, France and Germany combined. Today this industry is meeting the demands which a Victory Program is placing upon it, and in 1941 and 1942 will have spent more than one billion dollars on installing facilities to meet the increased demands of still further expanded defense efforts.

The reorganization of commercial committees is another step in our pledge to support accomplishment of the nation's great objective. It contemplates the best possible use of existing facilities; likewise education and direction toward better use of electricity in the daily lives of our citizens and in the defense of our country.

nitely limited and the manufacture of new appliances has already been severely limited in order to conserve materials, it follows that the ordinary routines for new business development will have to be modified in important respects. This does not mean however that electric utilities will not have many sales and service problems to deal with in the operation of their business. The war with its limitations and restrictions will interfere with the lives and business of our customers in many ways and this fact will impose new duties and responsibilities in the rendering of electric service.

Sales activities might take two principal forms, both quite definitely in the interest of consumers under war conditions and post-war conditions. The first of these is maintenance and effective use of electrical facilities already in the possession of users of electricity.

The second kind of sales service appropriate for war-time is that related to post-war conditions. Even under war conditions the total amount of new wiring, new installations of utilization equipment, and repairs or replacements is likely to make a very respectable total. It is quite important that all of this work should be directed toward its usefulness under post-war conditions. While a certain amount of this work will relate to war-time conditions alone, it would be a great pity if the materials and labor procured at great effort in war time should be wasted for want of adaptability to post-war service.—*A. M.*

Buy DEFENSE SAVINGS BONDS and STAMPS

KILOWATTHOUR GENERATION AND SALES, 1940 AND 1941

SOURCE AND DISPOSAL OF ENERGY

	1941	1940	%
GENERATION (Net)			
By Fuel Burning Plants	115,600,000,000	97,231,938,000	+18.9
By Water Power Plants	52,400,000,000	47,752,627,000	+ 9.7
Total Generation	168,000,000,000	144,984,565,000	+15.9
Add - Net Imports Over Internat'l Boundaries	900,000,000	937,095,000	- 4.0
Less - Company Use	2,100,000,000	1,719,717,000	+22.1
Less - Energy Used by Producer	3,660,000,000	5,547,946,000	-34.0
NET ENERGY FOR DISTRIBUTION	163,140,000,000	138,653,997,000	+17.7
Losses & Unaccounted For	22,800,000,000	20,010,700,000	+13.9
Sales to Ultimate Customers	140,340,000,000	118,643,297,000	+18.3

CLASSIFICATION OF SALES

NUMBER OF CUSTOMERS AS OF DECEMBER 31st			
Residential or Domestic	25,971,570	24,951,906	+ 4.1
Rural (Distinct Rural Rates)	988,220	685,812	+44.1
Commercial or Industrial			
Small Light & Power	4,300,040	4,260,255	+ 0.9
Large Light & Power	176,240	177,905	- 0.9
Street & Highway Lighting	24,884	24,147	+ 3.1
Other Public Authorities	90,519	89,480	+ 1.2
Railways and Railroads			
Street & Interurban Railways	205	198	+ 3.1
Electrified Steam Railroads	27	27	-
Interdepartmental	1,425	1,271	+12.1
Total Ultimate Customers	31,553,130	30,191,001	+ 4.5
KILOWATTHOURS SOLD			
Residential or Domestic	25,138,000,000	23,317,569,000	+ 7.8
Rural (Distinct Rural Rates)	2,350,000,000	1,990,908,000	+18.0
Commercial or Industrial			
Small Light & Power	24,730,000,000	22,373,336,000	+10.5
Large Light & Power	76,247,000,000	59,556,667,000	+28.0
Street & Highway Lighting	2,108,600,000	2,048,118,000	+ 3.0
Other Public Authorities	3,079,100,000	2,720,314,000	+13.2
Railways and Railroads			
Street & Interurban Railways	3,975,200,000	3,974,277,000	+ 0.0
Electrified Steam Railroads	2,119,100,000	1,935,484,000	+ 9.5
Interdepartmental	593,000,000	726,624,000	-18.4
Total to Ultimate Customers	140,340,000,000	118,643,297,000	+18.3
REVENUE			
Residential or Domestic	$ 939,058,000	$ 895,951,400	+ 4.8
Rural (Distinct Rural Rates)	63,510,000	49,473,400	+28.4
Commercial or Industrial			
Small Light & Power	727,363,000	689,253,000	+ 5.5
Large Light & Power	761,300,000	631,428,000	+20.6
Street & Highway Lighting	77,075,000	76,051,900	+ 1.3
Other Public Authorities	49,081,000	45,515,300	+ 7.8
Railways and Railroads			
Street & Interurban Railways	32,502,000	32,739,800	- 0.7
Electrified Steam Railroads	16,512,000	15,067,600	+ 9.6
Interdepartmental	4,049,000	4,737,100	-14.5
Revenue from Ultimate Customers	$ 2,670,450,000	$ 2,440,217,500	+ 9.4

The Electric Light and Power Industry in 1941

THE great increase in demands for industrial electric power, up 30 per cent due to defense effort, was successfully met in every section of the country except for a few weeks in the Southeast where extreme drought made necessary temporary curtailment of non-defense power uses.

Due to shortages of material, to other defense demands on manufacturers of turbines and to labor difficulties, generating capacity actually installed in 1941 fell 600,000 kilowatts behind installation programs.

Peak loads increased 3,250,000 kw during the year. Net additions to generating capacity amounted to 2,712,000 kw, or 538,000 kw less than the increase in peak loads, drawing to that small extent on reserves.

Installed capacity at the end of the year was 9,600,000 kw in excess of the sum of individual peak loads, compared with a margin of 10,150,000 kw last year.

Scheduled for installation in 1942 are 3,664,000 kw of generating capacity.

The scarcity of basic raw materials and the high state of general employment indicate that further expansion of war production must come primarily by decreasing non-defense business and by longer hours of plant operation. These factors will cause a further growth in energy output (kilowatt-hours) without much increase in requirements for new generating capacity.

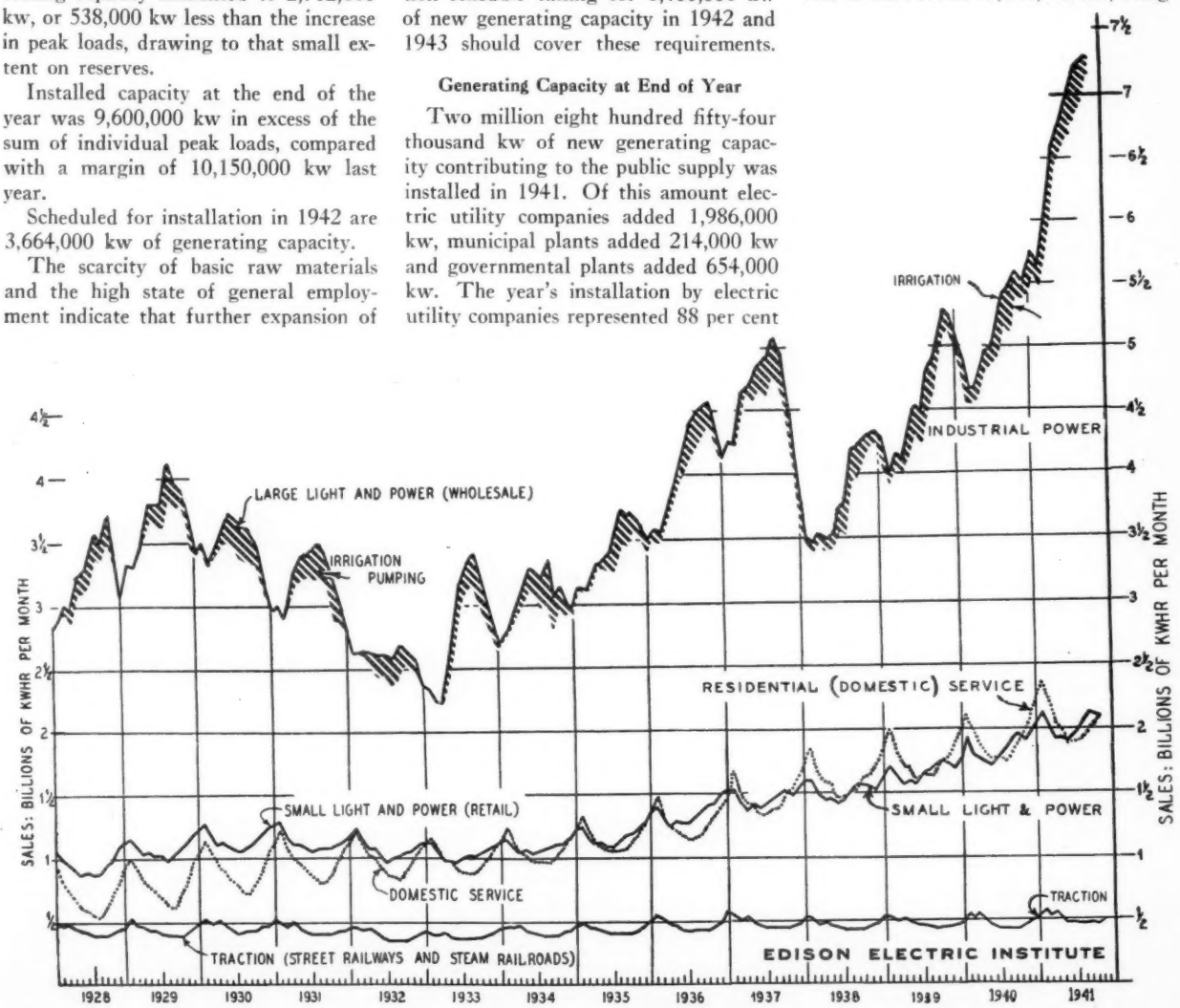
The principal need for additional generating capacity appears to be for increased production of aluminum, magnesium and the products of the electric furnace. According to present defense production programs, it is expected that these items will require in 1942 and 1943 an additional 2,000,000 kw of generating capacity. The present construction schedule calling for 6,400,000 kw of new generating capacity in 1942 and 1943 should cover these requirements.

Generating Capacity at End of Year

Two million eight hundred fifty-four thousand kw of new generating capacity contributing to the public supply was installed in 1941. Of this amount electric utility companies added 1,986,000 kw, municipal plants added 214,000 kw and governmental plants added 654,000 kw. The year's installation by electric utility companies represented 88 per cent of their programs announced a year ago.

After deducting equipment retired from service or reduced in capacity rating, the net gain was 2,712,000 kw, 1,975,000 kw of which was steam generating capacity, 681,000 kw in hydro electric plants and 56,000 in internal combustion engines. This brings the total central station generating capacity at the end of the year to 44,350,000 kw.

It is important to note that in addition to central station capacity a considerable number of manufacturing plants and mines produce their own electric power. At the end of 1941 the generating capacity of these isolated plants had reached about 12,000,000 kw, bring-


SALES: BILLIONS OF KWHR PER MONTH
SALES: BILLIONS OF KWHR PER MONTH
IRRIGATION
INDUSTRIAL POWER
LARGE LIGHT AND POWER (WHOLESALE)
IRRIGATION PUMPING
RESIDENTIAL (DOMESTIC) SERVICE
SMALL LIGHT AND POWER (RETAIL)
SMALL LIGHT & POWER
DOMESTIC SERVICE
TRACTION
TRACTION (STREET RAILWAYS AND STEAM RAILROADS)
EDISON ELECTRIC INSTITUTE
1928 1929 1930 1931 1932 1933 1934 1935 1936 1937 1938 1939 1940 1941

Monthly sales of electricity since 1928—The effect of the war is apparent only in sales of industrial power, which have risen by some 3 billion kwhr since the summer of 1939

GENERATING CAPACITY BY STATES AND TYPE OF PRIME MOVER*

(Kilowatt Generator Capacity of All Plants Contributing to the Public Supply)
Estimated for December 31, 1941

States	Total	Steam	Hydro	Internal Combustion
Total United States	44,351,700	30,995,400	12,356,200	1,000,100
Maine	291,700	71,700	217,500	2,500
New Hampshire	315,400	80,500	233,800	1,100
Vermont	178,000	11,300	166,000	700
Massachusetts	1,372,500	1,199,400	164,100	9,000
Rhode Island	281,500	278,000	3,300	200
Connecticut	740,000	645,400	90,500	4,100
Total New England	3,179,100	2,286,300	875,200	17,600
New York	5,842,700	4,649,500	1,169,900	23,300
New Jersey	1,330,500	1,319,500	7,100	3,900
Pennsylvania	3,256,600	2,821,600	424,700	10,300
Total Middle Atlantic	10,429,800	8,790,600	1,601,700	37,500
Ohio	2,696,600	2,670,400	12,100	14,100
Indiana	1,405,000	1,343,400	35,500	26,100
Illinois	2,845,700	2,777,500	48,400	19,800
Michigan	2,239,000	1,852,700	350,800	35,500
Wisconsin	1,013,700	723,800	271,500	18,400
Total East North Central	10,200,000	9,367,800	718,300	113,900
Minnesota	704,300	508,400	157,600	38,300
Iowa	738,300	521,300	131,000	86,000
Missouri	853,100	641,800	158,400	52,900
North Dakota	93,800	85,300	-	8,500
South Dakota	87,900	52,400	4,100	31,300
Nebraska	370,200	228,200	88,600	53,400
Kansas	538,000	459,200	6,900	71,900
Total West North Central	3,385,500	2,496,600	546,600	342,300
Delaware	37,500	33,200	-	4,300
Maryland	755,000	474,000	271,400	9,600
District of Columbia	307,400	305,000	2,400	-
Virginia	671,000	475,700	183,400	11,900
West Virginia	793,300	687,400	101,000	4,900
North Carolina	1,309,800	572,300	729,500	8,000
South Carolina	658,800	137,400	518,100	3,300
Georgia	586,900	240,700	343,900	2,300
Florida	443,100	389,900	14,400	38,800
Total South Atlantic	5,562,800	3,315,600	2,164,100	83,100
Kentucky	410,300	296,000	111,100	3,200
Tennessee	707,400	192,600	512,800	2,200
Alabama	1,103,400	288,300	808,200	6,900
Mississippi	63,700	49,000	-	14,700
Total East South Central	2,284,800	825,900	1,431,900	27,000
Arkansas	155,600	69,900	67,000	18,700
Louisiana	420,600	376,100	-	44,500
Oklahoma	436,400	322,700	59,200	54,500
Texas	1,243,400	995,300	152,300	95,800
Total West South Central	2,256,000	1,764,000	278,500	213,500
Montana	336,500	12,200	321,600	2,700
Idaho	263,300	700	259,700	2,900
Wyoming	88,500	33,600	49,900	5,000
Colorado	322,700	242,500	66,100	14,100
New Mexico	144,200	99,900	25,200	19,100
Arizona	621,100	117,200	458,100	45,800
Utah	189,200	66,200	92,800	10,200
Nevada	509,400	2,500	503,900	3,000
Total Mountain	2,454,900	574,800	1,777,300	102,800
Washington	1,158,100	219,000	931,700	7,400
Oregon	635,700	187,800	442,300	5,600
California	2,805,000	1,167,000	1,588,600	49,400
Total Pacific	4,598,800	1,573,800	2,962,600	62,400

* Manufacturing plants and mines generating their own electricity have additional installations of approximately 12,000,000 kw capacity.

GENERATING CAPACITY ADDITIONS (Kilowatts)

(Data cover all plants contributing to the public supply)
1941 Actual—Estimates for 1942-43 and 44

	1941	1942	1943	1944*
Total United States	2,854,346	3,654,475	2,746,000	1,397,000
Maine	3,163	20,000	20,000	-
New Hampshire	2	7,500	10,000	10,000
Vermont	480	-	-	-
Massachusetts	17,489	112,500	50,000	35,000
Rhode Island	43,500	-	-	-
Connecticut	57,500	85,200	25,000	-
Total New England	122,134	225,200	105,000	45,000
New York	274,548	132,000	81,500	-
New Jersey	101,200	150,000	50,000	35,000
Pennsylvania	181,531	140,000	305,000	150,000
Total Middle Atlantic	557,279	422,000	436,500	185,000
Ohio	210,135	345,500	135,000	85,000
Indiana	133,975	35,000	120,000	-
Illinois	242,649	314,000	185,000	155,000
Michigan	172,125	78,000	125,000	75,000
Wisconsin	15,497	90,000	95,000	-
Total East North Central	774,381	862,500	660,000	315,000
Minnesota	10,534	67,500	50,000	20,000
Iowa	32,598	9,500	22,950	3,000
Missouri	11,258	4,500	-	35,000
North Dakota	706	-	-	-
South Dakota	1,457	-	7,500	-
Nebraska	3,775	-	-	-
Kansas	14,895	-	30,000	-
Total West North Central	75,223	81,500	110,450	58,000
Delaware	-	-	-	-
Maryland & Dist. of Columbia	70,847	100,000	50,000	100,000
Virginia	41,923	19,000	15,000	85,000
West Virginia	60,000	205,000	-	-
North Carolina	114,270	133,200	72,000	-
South Carolina	2,600	122,400	-	-
Georgia	100,525	40,000	40,000	-
Florida	2,836	40,000	25,000	20,000
Total South Atlantic	393,001	659,600	202,000	205,000
Kentucky	40,500	50,000	25,000	153,000
Tennessee	5,717	432,000	148,000	-
Alabama	110,500	148,000	85,200	-
Mississippi	388	-	-	20,00
Total East South Central	157,105	630,000	258,200	173,000
Arkansas	705	2,500	25,000	-
Louisiana	3,781	-	50,000	-
Oklahoma	68,775	7,500	20,000	15,000
Texas	82,816	44,400	90,000	35,000
Total West South Central	156,075	54,400	185,000	50,000
Montana	79	-	50,000	-
Idaho	340	300	-	-
Wyoming	736	-	-	-
Colorado	33,532	5,625	21,600	-
New Mexico	6,919	-	-	-
Arizona	190,260	168,000	-	-
Utah	6,763	-	250	-
Nevada	125	-	-	-
Total Mountain	238,754	173,925	71,850	-
Washington	141,179	216,000	108,000	306,000
Oregon	118,323	54,000	216,000	-
California	120,891	275,350	393,000	60,000
Total Pacific	380,393	545,350	717,000	366,000

*Incomplete

ing all generating capacity in the United States to a total of 56,000,000 kw at the end of the year. Manufacturing and mining plants added 1,000,000 kw of capacity in 1941 and are expected to add an additional 900,000 kw in 1942.

Proposed Additions

New generating capacity to be installed in 1942 by companies, municipal and government plants is estimated to be 3,664,000 kw. Electric utility companies alone are planning to install 2,384,000 kw. The adjoining table shows the schedule for completion of new generating capacity in 1942 and 1943 and in 1944 in so far as the schedules for that year have been announced.

Priorities have materially influenced the scheduled installations. A re-survey made Dec. 1, 1941, of expected delivery dates of equipment showed that the 1942 schedules had been augmented several hundred thousand kilowatts by installations planned for 1941 but not completed that year, that a large amount of capacity scheduled for 1942 had been deferred to 1943, and considerably more scheduled for 1943 had been deferred to 1944. The table gives the result of this December 1 re-survey.

Later developments, of course, may cause further deferments in these schedules but the 1942 schedule is already well under way toward completion.

Peak Loads

The sum of the December peak loads on the various systems of the country will show about 10 per cent above the figure for last year, bringing the total to approximately 34,750,000 kw. The total installed generating capacity of the country was 9,600,000 kw more than the sum of the individual peak loads. This margin represents unused capacity which is available to carry additional loads and capacity held in reserve against breakdowns and other emergency conditions, including periods of low water.

Construction Budgets—Electric Utility Companies

In 1941 the electric utility companies of the United States spent in round numbers $600,000,000 on new construction. This substantially equalled the construction budget reported at the beginning of the year. The construction expenditures were: 38 per cent for generating capacity; 21 per cent for transmission lines and substations; 37 per cent for distribution lines; and 4 per cent for miscellaneous structures.

The reported 1942 budgets are 10 per cent greater than 1941 budgets. 1942 expenditures, however, will depend upon the availability of materials and equipment. Extensions of service into new areas are prohibited under existing OPM orders except to serve defense projects, but government announcements indicate that these projects are to be greatly expanded. In view of OPM orders, distribution expenditures are expected to be sharply curtailed but expenditures for generating stations should be 25 per cent heavier than in 1941.

Output

Output of electricity in 1941 by all agencies contributing to the public supply totaled about 168,000,000,000 kwhr, an increase of 16 per cent over that for the previous year. Fuels produced 115,600,000,000 kwhr, an increase of nearly 19 per cent, and water power produced

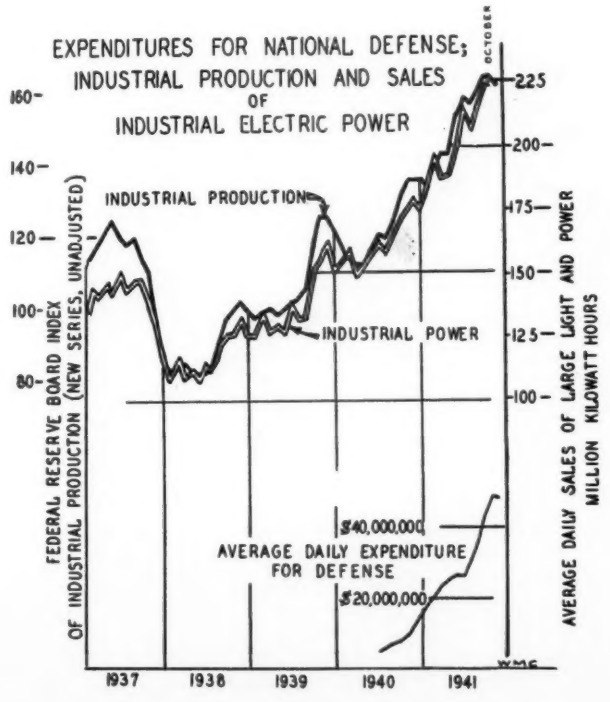
CAPACITY CHANGES (KILOWATTS) IN 1941

Ownership	Capacity Changes During 1941: Gross Additions (New Construction)	Capacity Retired	Changes in Ownership	Net Additions
Private Companies	1,983,400	75,700	- 68,000	1,839,700
Municipal Plants	213,900	39,200	+ 100	174,600
Governmental	654,400	700	+ 67,400	721,100
Other Electric Rwys., Etc	2,700	25,900	+ 500	- 22,700
Total	2,854,400	141,500	0	2,712,700

	Scheduled Construction*	Actual Construction	Difference	% Construction
Private Companies	2,260,000	1,983,000	- 277,000	88
Municipal Plants	370,000	214,000	- 156,000	57
Governmental	890,000	654,000	- 236,000	73
Other	-	3,000	+ 3,000	-
Total	3,520,000	2,854,000	- 666,000	81

Scheduled Additions (1942 - 1944)	1942	1943	1944**
Private Companies	2,384,000	1,958,000	963,000
Municipal Plants	123,000	117,000	90,000
Governmental	1,157,000	671,000	344,000
Total	3,664,000	2,746,000	1,397,000

* Table #2 - Statistical Bulletin #8
** Incomplete



52,400,000,000 kwhr, an increase of 10 per cent over the previous year.

The record breaking drouth throughout the territory east of the Mississippi reduced output of hydro electric plants in New England about 8 per cent below normal and in the Middle Atlantic states about 5 per cent below normal. In the Southeastern states stream flow was seriously reduced but because more hydro generating capacity was in operation than during the previous year the net effect was only a 4 per cent reduction below the previous year's hydro electric output. In all other sections of the country the output of hydro electric plants was above their 1940 output.

Industrial and mining plants in 1941 are estimated to have produced about 40,000,000,000 kwhr, making the grand total power output from all sources 208,000,000,000 kwhr. This compares with 143,000,000,000 kwhr in 1938 when the United States produced one-half as much electricity as all the rest of the world combined.

Largest Number of New Customers in 15 Years

The grand total of electric customers of all classes was 31,553,000 at the close of 1941. This represents an acquisition of 1,362,000 customers during the year and constitutes the greatest gain since 1927. Housing for defense workers caused much of this expansion. At the end of the year there were 2,350,000 farm customers, about two-thirds of whom are served by electric utility companies. Of the estimated 35,400,000 families in the United States, 27,000,000 or 76 per cent are now taking electric service.

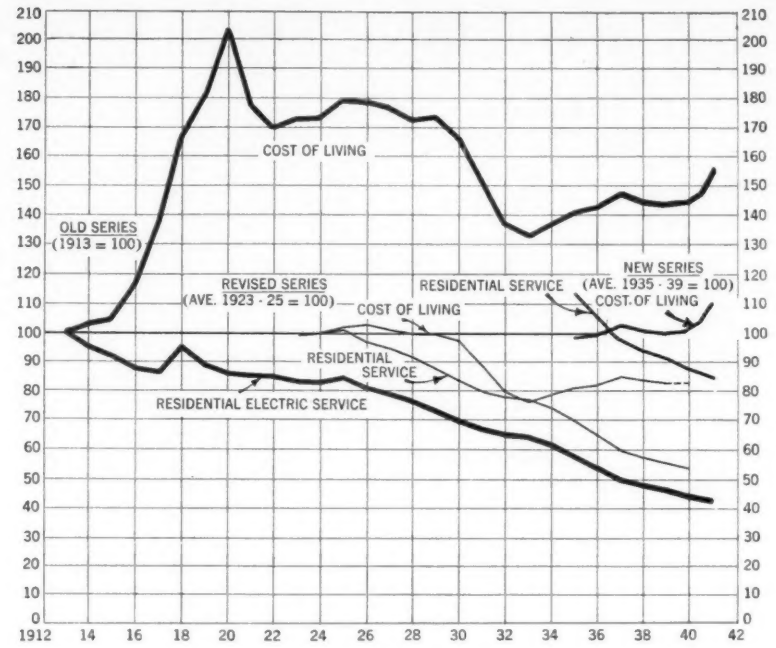
Demand for Appliances Breaks All Records

The year 1941 broke all records in demand for electric appliances. More ranges, refrigerators, vacuum cleaners and other appliances were sold than ever before. Sales of refrigerators exceeded 3,500,000 units, or 800,000 more than were sold in 1940, the previous high figure. Sales of electric ranges reached 750,000 compared with 436,000 in the previous year. While these large purchases of electric appliances are not likely to be repeated in 1942 because of priorities and lack of stocks, those already installed constitute a substantial backlog for sustaining the level of domestic electric use for some years to come.

NUMBER OF CUSTOMERS AT END OF 1941

(By Class of Service)

	Total	Residential or Domestic	Rural (Distinct Rural Rates)	Commercial and Industrial Small	Commercial and Industrial Large	Street & Highway Lighting	Other Public Authorities	Railways and Railroads	Inter Departmental
Total United States	31,553,130	25,971,570	988,220	4,300,040	176,240	24,884	90,519	232	1,425
Maine	230,800	190,010	2,410	31,000	4,800	480	2,094	2	4
New Hampshire	152,900	131,000	170	18,840	1,200	230	1,658	1	1
Vermont	95,800	77,000	3,320	13,500	1,050	230	698	1	1
Massachusetts	1,341,800	1,150,000	1,020	183,000	6,590	660	314	8	208
Rhode Island	217,900	189,000	400	27,420	950	40	90	-	-
Connecticut	535,500	466,000	500	64,140	4,670	80	100	-	10
Total New England	2,574,700	2,203,010	7,820	337,700	19,260	1,720	4,954	12	224
New York	4,097,700	3,460,000	700	592,000	30,600	1,580	12,710	30	80
New Jersey	1,320,500	1,120,000	80	195,600	3,000	685	1,126	5	4
Pennsylvania	2,546,800	2,170,000	31,500	320,000	17,770	1,880	5,600	23	27
Total Middle Atlantic	7,965,000	6,750,000	32,280	1,107,600	51,370	4,145	19,436	58	111
Ohio	1,966,900	1,650,000	78,400	217,420	11,510	980	8,551	18	21
Indiana	931,700	745,000	63,000	110,550	7,600	1,020	4,480	9	41
Illinois	2,160,300	1,820,000	66,000	261,700	10,150	1,020	1,408	12	10
Michigan	1,498,200	1,305,000	14,500	174,000	2,480	860	1,329	6	25
Wisconsin	826,200	640,000	71,700	111,000	1,360	1,390	716	4	30
Total East No Central	7,383,300	6,160,000	293,600	874,670	33,100	5,270	16,484	49	127
Minnesota	644,900	530,000	15,160	97,200	1,030	710	798	2	-
Iowa	605,600	470,000	36,400	95,670	1,470	825	1,226	5	2
Missouri	834,820	680,000	25,400	125,000	2,220	560	1,616	2	22
North Dakota	96,900	74,000	500	21,090	650	430	226	-	4
South Dakota	99,920	77,000	880	21,320	40	295	375	-	10
Nebraska	298,600	245,000	9,840	42,400	400	410	728	2	20
Kansas	416,100	330,000	22,600	59,600	1,310	650	1,880	-	60
Total West No Central	2,997,040	2,406,000	110,780	462,280	7,120	3,880	6,851	11	118
Delaware	69,500	59,560	540	8,720	440	62	175	1	2
Maryland-Dist.of Columbia	621,100	514,000	24,800	80,720	1,140	200	232	7	1
Virginia	467,700	390,000	10,600	63,150	1,320	280	2,336	4	10
West Virginia	323,900	262,600	20,000	37,870	1,560	230	1,596	4	40
North Carolina	509,740	412,000	24,500	69,400	2,240	440	1,033	-	127
South Carolina	211,300	170,000	8,100	32,000	730	250	230	-	-
Georgia	408,100	343,000	1,600	62,000	700	530	266	1	3
Florida	412,100	330,000	7,000	70,000	1,600	290	3,140	-	70
Total South Atlantic	3,023,440	2,481,160	97,140	423,860	9,720	2,282	9,008	17	253
Kentucky	400,500	326,000	16,000	50,500	4,760	380	2,858	1	1
Tennessee	422,700	355,000	8,700	56,000	1,130	280	1,560	15	15
Alabama	329,900	250,000	38,300	39,100	1,630	310	555	-	5
Mississippi	184,600	142,000	10,000	30,400	750	220	1,230	-	-
Total East So Central	1,337,700	1,073,000	73,000	176,000	8,270	1,190	6,203	16	21
Arkansas	198,500	154,000	7,700	33,500	1,360	270	1,662	1	7
Louisiana	334,600	280,000	2,500	48,000	2,730	270	1,099	1	-
Oklahoma	366,000	287,000	13,500	54,000	9,310	350	1,826	4	10
Texas	1,097,700	880,000	37,000	164,000	9,570	1,000	5,080	4	46
Total West So Central	1,996,800	1,601,000	60,700	299,500	22,970	1,890	10,667	10	63
Montana	123,100	104,000	0	17,170	520	180	1,228	2	-
Idaho	137,350	111,000	4,900	19,600	370	160	1,312	0	8
Wyoming	50,600	42,000	400	7,040	1,050	65	45	-	-
Colorado	268,200	209,000	12,500	38,000	7,800	190	699	-	11
New Mexico	63,300	51,300	0	11,600	150	42	196	1	11
Arizona	107,900	90,000	1,400	15,900	280	60	248	1	11
Utah	140,900	125,000	700	13,000	1,210	240	741	9	-
Nevada	30,400	25,100	-	5,130	130	40	10	-	-
Total Mountain	921,750	757,400	19,900	127,430	11,510	977	4,479	13	41
Washington	570,700	470,000	23,000	70,000	5,000	1,000	1,460	19	221
Oregon	329,700	270,000	10,000	46,000	2,220	280	1,197	3	-
California	2,453,000	1,800,000	260,000	375,000	5,700	2,250	9,780	24	246
Total Pacific	3,353,400	2,540,000	293,000	491,000	12,920	3,530	12,437	46	467



Index Numbers of Cost of Living and Electricity—The price of residential electric service continues the long-time trend established in 1925

Rates

New low records were made in electric rates in 1941. At a time of rising price levels, the average price of electricity for domestic service lowered to 3.73 cents per kilowatthour as compared with 3.84 cents the year before and 5.78 cents ten years ago. The average residential customer used 986 kwhr during the year as compared with 952 kwhr in 1940. In ten years the use of electricity per customer for household purposes has increased by 400 kwhr, while the average price has dropped until it is but 64 per cent of the former figure.

Except for Taxation, 1941 Financial Results Satisfactory

Total revenues of the private companies in 1941 approximated $2,490,000,000, an increase of $213,000,000, or 9.4 per cent over the year before. According to reports of the companies which have published them for ten months of the year (with November and December estimated), operating expenses plus depreciation rose at about the same rate as revenues. Taxes, applicable to electric operations, increased by almost $100,000,000 from $413,000,000 in 1940 to $510,000,000 in 1941. This represents an increase of 23½ per cent, and taxes now consume 20½ cents of every dollar collected from all consumers of electricity.

The composite income statement of the operating electric utility companies for 1941 will show a balance for common stocks and surplus of about $416,000,000. This is about 2 per cent less than 1940. The increase in gross earnings of about $213,000,000, as well as the decrease in interest charge of about $12,000,000, have all been absorbed in increased costs for operation and taxes. Taxes are greater than payrolls. They now exceed by 40 per cent the combined total of requirements for bond interest and preferred dividends.

Security Flotations Smallest in Several Years

Financing operations in 1941 were estimated at a total of $700,000,000 for the operating electric utility companies. This was substantially less than the $958,000,000 reported for the year before and the smallest since 1937, when $645,000,000 in securities were issued. Of the 1941 total, approximately $110,000,000 could be considered as new financing.

Second Transformer Standardization Report Available Jan. 1

THE Second Report of the EEI-NEMA Joint Committee on Standards for Distribution Transformers will be available on January 1, 1942, as a Joint EEI-NEMA Publication*.

The report includes the complete range of 60-cycle pole-type distribution transformers 15,000 volts and below through 100 kva. It thus incorporates the specification material covered by the First Report and the First Report Supplement, as well as including new information on the range 37½ to 100-kva inclusive.

Among the features of the Second Report applying to the larger sizes will be—

(a) Standard ratings 37½ and 50 kva—5000 volts and below without high-voltage taps. Tapped transformers in these ratings will be listed and available for use where required.

(b) Standardized taps are established on other ratings 37½—100 kva inclusive, 15,000 volts and below.

(c) Provision for direct pole mounting as standard for transformers 50 kva and below and with accessory equipment for 75 and 100-kva ratings. Accessories for crossarm suspension are included and are classified as available where required.

(d) Standardized low-voltage terminal openings covering maximum and minimum range and conductor diameters are established. Minimum clearances between terminals are established.

(e) Standardized vertical locations of low-voltage terminals with respect to mounting, standardized position of grounding terminals and pads, radial location of high and low-voltage bushings, and extension of many standardized features from the sizes 25 kva and below are established.

Transformers 37½ to 100 kva inclusive built to the specifications of the Second Report are not now available. Before they can be placed in production suitable dies, tools and fixtures must be prepared. Under present conditions, it is impossible to predict when the new transformers in this range will be generally available. Future issues of the EEI Bulletin will contain further information on progress in this direction.

It is recommended that utility engineers take the opportunity of becoming thoroughly familiar with the details of the specification so that their line construction and current practices may be adapted to the new transformer construction for maximum economy as soon as it becomes generally available.

* The Second Report of the EEI-NEMA Joint Committee on Standards for Distribution Transformers will be designated as EEI Publication No. I-9, NEMA Publication No. 110. Copies will be available from EEI Headquarters at 25¢ per copy for members and 60¢ per copy for non-members.

The Utilities and the Copper Situation

By C. W. Kellogg
President, Edison Electric Institute

In view of the reported limited availability of copper to meet the present aggregate military and civilian demand for that metal and because electric utilities, upon which devolve a very important industrial role in America's war effort, are important users of copper, the following information concerning copper use by the electric light and power industry was submitted before the Special Committee of U. S. Senate to Investigate the National Defense Program, Dec. 12, 1941, in the hope that it will prove helpful in making possible the soundest allocation of copper to meet the more pressing needs of the nation for this metal at the present time.

ONE official of the Office of Production Management has recently said, "The biggest copper mine available to us is *conservation* of our existing supply." As one measure to help promote such conservation, the Edison Electric Institute has recently collected data from the industry and made studies of copper use by electric utility companies. The information presented herein is derived chiefly from the data thus collected. Copies of such basic data have previously been supplied to OPM.

At the present time the entire electric light and power industry in the United States is serving approximately 31,500,000 customers, including about 1,300,000 added in 1941. Electric utility companies serve approximately 26,700,000 customers, or 85 per cent of the total, including about 900,000 added in 1941. A large percentage of these additions were made to supply new housing in areas where shipbuilding plants, airplane and other munitions factories are located.

The important role the electric light and power industry is playing in the defense program is indicated by the fact that industrial power sales in 1941 rose 32 per cent above the already high 1940 level. This enormous new load falls heavily upon all systems, but especially upon the electric utility companies serving the large industrial areas. They have been able to handle the job successfully because they have the facilities already operating and the trained organizations and personnel with which to do it.

In 1941 such companies are adding about 2,100,000 kw of capacity. In 1942 they have planned to add 2,300,000 kw, and in 1943 they planned to add another 2,500,000 kw to keep abreast of the expanding munitions program. The accomplishment of this program, of course, must depend upon priorities established by the Federal Government, especially upon the relative need for turbines for ships as compared with that for turbines for industrial use.

Copper Requirements of Electric Light and Power Industry

Based on quite detailed reports from electric utility companies, municipal plants and other governmental power systems representing two-thirds of the electric industry throughout the United States, it is estimated that the copper use in 1941 of all company, municipal and governmental power systems, but exclusive of rural cooperatives under the REA, will amount to 152,000 tons. This estimate covers all copper uses, including wire and cable, copper bars, shapes, tubing, switches, copper in various alloys used in power equipment, and copper in the windings of transformers, in generators and in other rotating machines.

This 152,000 tons compares with a total supply of copper available to this this country, as estimated by OPM on Oct. 21, 1941, of approximately 1,650,000 tons for the year 1942 and estimated needs for defense and non-defense purposes for that year of 2,400,000 tons. The 152,000 tons is about 9 per cent of the available supply. The use of the privately-owned utility systems is slightly under 8 per cent of such available supply.

The Edison Electric Institute does not have information on the copper use of rural cooperatives. These cooperatives, however, serve less than 3 per cent of the total number of customers and sell less than one-half per cent of the total electric energy sold by the industry, but their copper requirements have been proportionately very much larger than for the rest of the industry because they have been expanding much more rapidly and because it takes three to four times as much copper per customer on the average rural lines than is required for the average of all customers. If they embark upon a program of building their own generating and transmission systems rather than continuing to take wholesale service from the existing systems, as well as to build distribution lines in rural areas, which has been their basic function to date, their use of copper will be even greater. Under present OPM priority restrictions, extensions into new rural territory of electric companies is practically stopped. Presumably similar limitations apply also to extensions by REA cooperatives into heretofore unserved territory. This would be in line with present practice in Canada where the government has required both public and private electric systems, according to an official announcement, to "eliminate further rural extensions."

129,000 Tons Electric Utility Company Copper Use in 1941

The electric utility companies, exclusive of government-owned systems, according to data collected from these companies, and supplemented by calculations based on manufacturers' data, in the calendar year 1941 will have used 129,000 tons of copper for all purposes. This use of copper is divided according to purpose approximately as follows:

For construction projects—additional generating capacity, substations, transmission lines — directly and indirectly occasioned by national defense loads	34,000 tons
For ordinary extensions of electric service to new customers	43,000 tons
For maintenance and repair of existing systems	52,000 tons
	129,000 tons

A break-down of these figures showing use of copper is given in Table I.

Steps Electric Utility Companies Took to Anticipate the Present Copper Situation

In 1939 and 1940, the electric utility companies, in response to government requests, expanded their plans for installation of generating capacity above existing needs as a measure to promote the national defense. This undertaking alone amounted to 1,000,000 kw of gen-

erating capacity in 1939 and 500,000 kw in 1940.

In 1940, these companies began surveying their facilities and the possible war emergency requirements with a view to providing so far as feasible an ample supply of spare parts and materials and emergency stocks before either copper or manufacturing facilities became heavily tied up with defense emergency production, thus by advance planning relieving subsequent shortages to an important extent. They were advised and urged to take these steps by Federal agencies, including the War Department, the Federal Bureau of Investigation and the Federal Power Commission, at conferences held in Washington and at points throughout the country, as well as during field inspection of utility operating properties by government representatives.

A good supply of parts for the more critical equipment was thus procured and is therefore already on hand as a safeguard to electric service against sabotage, acts of war or breakdowns of equipment subject to heavy loading. In the case of bulk items like wire and cable, however, due partly to the necessity to forego the use of aluminum wire altogether and substitute copper therefor, and partly to the necessity of using available material for quick service to the new Army camps and defense plants, it was only feasible to increase a normal four months' supply of these materials to about six months' supply. Much of this added supply has already been used up since midsummer, leaving stocks which may yet prove too short in 1942 to meet further emergency expansion for defense projects; especially if the defense program is again doubled, as Mr. Donald M. Nelson, on Dec. 3, 1941, indicated it would be.

As a conservation measure, electric utility companies have also intensified their usual practice of *salvaging and reclaiming material,* especially copper wire so as to reduce the normal demand for fabricated items of all kinds. They are using this means to help meet the reduction in copper maintenance, repair and operation, as required by OPM's Order P-46.

Electric utility companies are further cooperating and will continue to cooperate with the Conservation Branch of OPM to move *scrap copper* promptly as it accumulates from the companies to designated depository agencies to help meet the 1942 demand. With replacements held to a minimum, however, less scrap will be available than would normally be the case.

TABLE I—COPPER USE BY THE ELECTRIC UTILITY COMPANIES FOR ALL PURPOSES

Year 1941

Item	*Maintenance, Repair, and Replacements*	*Ordinary Service Extensions*	*Major Construction Projects*	*Total for All Purposes*
		(Short Tons)		
Wires and Cables	40,800	38,200	20,400	99,400
Bus Bars, Tubing, Fabricated or other Shapes	3,100	800	3,000	6,900
Calculated Copper Content in:				
(a) Brass, admiralty metal and other alloy uses in tubes, shapes, etc.	1,100	0	2,300	3,400
(b) Distribution Transformer Windings	3,000	3,600	1,000	7,600
(c) Power Transformer Windings	3,500	0	6,100	9,600
(d) Generators and Other Rotating Equipment	400	0	1,300	1,700
(e) Meters, relays, instruments, etc.	*small*	*small*	*small*	*small*
Total Calculated Copper Content Items	8,000	3,600	10,700	22,300
GRAND TOTAL	51,900	42,600	34,100	128,600

Copper Priorities

Early in 1941 priorities became necessary to procure new turbines. On May 8, 1941, the OPM issued an order placing copper on the critical list and on May 29, 1941, it was placed under full priority control. By midsummer it was not possible to purchase copper except under defense priority ratings and at and since that time no such priorities have been available to electric utility companies except to serve defense loads.

Defense loads cover only those for Army and Navy contracts, contracts pertaining to the shipbuilding program, those relating to the lend-lease program, certain contracts of the Coast Guard, Civil Aeronautics Authority, and similar vital loads given defense ratings by OPM.

PD-1 forms for requesting priorities on specific items of equipment were made available by OPM in March, 1941, but it was not until the middle of September, 1941, that OPM issued Order P-46 setting up a basis for priorities for essential maintenance, repair and operating supplies for utility systems, and granting A-10 priority for such materials. This priority, which applies to copper supplies as to other materials, has since been available in all utility systems, including the private utility companies, municipal systems and REA cooperatives.

However, in general, any materials purchased under this P-46 order with its A-10 rating will not be delivered before another four to six months. It is a factor, therefore, to be considered in estimating requirements and supply for 1942, but its effect in 1941 has been chiefly to limit use of materials already on hand and to freeze existing stocks and existing systems so far as construction of extensions is concerned. This is particularly applicable to the copper situation, since copper is a determining material both in utility maintenance and in utility construction work.

Order P-46 carries with it strict control not only over inventories, but also over receipts and withdrawals from stocks of supplies used by utility systems for the purposes of maintenance and repair and of minor extensions, which are arbitrarily defined as those using less than $500 of material on all overhead system jobs.

Inventories are required to be reduced to 1940 levels and an overall limitation on both receipts and withdrawals is imposed which holds these in any one quarter down to 25 per cent, on a dollar value basis, of such receipts and withdrawals during 1940. Thus, even if stocks are on hand, they can only be used on projects complying with such strict priority regulations. This limitation is equivalent to a reduction below the 1941 rate of use of supplies of about 30 per cent, because not only was 1941 use below 1940, but an increased price level averaging some 15 per cent, in view of the dollar value basis of the limitation, makes a corresponding reduction in the actual feet or pounds of material or number of items that can be received or withdrawn from stores.

With loads and number of customers increasing and with increasing proportions of all equipment and facilities oper-

ating at high capacities and for longer hours, such restrictions will be increasingly severe in 1942. They will inevitably mean that the task of maintaining safe operations and service in the year ahead will be one to try even the skilled and experienced operating and engineering personnel of the existing utility systems.

The problem is, however, somewhat less serious for the present than might otherwise have been the case were it not for the fact that such systems have entered this emergency period in a high state of operating efficiency, both as to equipment and as to personnel. Such conditions, coupled with stringent limitations on use of copper for system extensions, will tend to make fundamental utility needs for copper in 1942 correspondingly less than would otherwise be the case.

Requirements for 1942

Copper requirements of electric utility companies for the construction of new projects in 1942 and subsequently will depend primarily on the expansion of munitions factories and of other facilities for the defense program. In any case, it will depend upon prior OPM approval of each new construction project; even for short distance line extension.

Ordinary extensions of service are sharply limited by existing OPM orders. New distribution lines can only be built after prior approval and upon satisfactory showing of direct importance to the defense program. On this basis it is impossible to estimate precise requirements for such extensions in 1942, but it would seem that requirements for such uses are not likely to exceed 20 per cent of similar use of copper in 1941. If this be so, requirements will be of the order of 8,600 tons in 1942. The utility companies are already cooperating on such basis and are advising their customers publicly of such policy and of its necessity under an "all-out" defense program.

Under existing OPM orders, the use of copper for maintenance and repair purposes is expected, as already outlined heretofore, to be reduced in 1942 about 30 per cent below the 1941 level. The aim is to achieve the full amount of such reduction if reasonably compatable with defense service requirements.

It is estimated, therefore, that as OPM orders now stand electric utility companies in 1942 will require about 36,400 tons of copper for maintenance, repair and operating supplies of existing systems. Parenthetically, about 8,000 tons of copper would be needed to take care of similar requirements for the systems of municipal and other governmental agencies, exclusive of rural cooperatives, which are not included in this estimate.

Because of lack of information concerning further expansion of munitions factories and other defense facilities, neither the electric utility companies nor the Edison Electric Institute is in a position to estimate actual copper requirements in 1942 to carry out construction projects and increases of system capacity under specific project priorities. The preliminary construction program of such utility companies for 1942, as it now stands, would require about 10 per cent more copper for such construction projects than was used in 1941 for similar projects. If so, such requirements will be about 37,000 tons. On such a basis, with strict economy of use coupled with drastic limitations and priorities, copper use by the electric utility companies in 1942 might be held to as low as 82,000 tons.

However, any extensive program of further emergency interconnections of present transmission systems and parts of systems might alter this estimate upward by a considerable amount, possibly by as much as 25,000 to 35,000 tons. If so, the aggregate 1942 copper requirements of the electric utility companies would be raised to about 107,000 to 117,000 tons, as compared with 129,000 tons in 1941. On such basis, 1942 requirements would amount to 7 per cent of the total estimated available copper supply of 1,650,000 tons.

Conservation of Copper in 1942

Emphasis may again properly be directed to the previously quoted and very applicable remark of one OPM official that, "The biggest copper mine available to us is conservation of our existing supply."

One of the most effective ways to apply this principle under 1942 emergency conditions is to make the greatest feasible use of those systems and facilities already in place and in operation. Wherever it is possible by able engineering and operating skill to make such facilities meet loads beyond those now carried by them, the need for additional copper use and other similarly critical materials is correspondingly reduced.

This applies to all industry, but it has particular significance with respect to the electric utility company systems and their needs for copper in 1942. The staffs of electric utility companies have made and are continuing to make the most careful engineering studies to get the most out of their facilities so as to meet developments in the country's war program as they are decided upon by government officials. To this end they have consistently cooperated with and sought guidance from the various government agencies concerned directly with their operations.

Good engineering and trained and coordinated operation applied to well engineered utility systems permit the taking on of new loads with minimum requirements for additional generating capacity, transmission lines and critical materials generally. It is obvious that the increment construction requirements to expand such existing systems are, in general, very much less than the material expenditures required to serve new or increased loads by any other means.

The staffs of the electric utility companies of the United States have built and are running the highly coordinated facilities which are today serving some seven-eighths of the nation's total electrical requirements. These companies have always operated on a twenty-four hour day and a seven day week.

The electric utility companies will help all they can in order that the critical situation as to copper in 1942 may be met most successfully. If, as present figures and estimates indicate, 1942 military and other needs for copper will exceed foreseeable supplies by some 750,000 tons, the electric utility companies will do everything possible to avoid adding any capacity or building any transmission or distribution lines which can reasonably be avoided by making more intensive use of present facilities and of the minimum possible increment additions thereto.

Those companies will pledge now that, to make every possible pound of copper available for shell cases, they will avoid all unnecessary duplication of copper-using equipment or extensions, even to the extent, if essential, of curtailing use of present electric supply facilities by non-defense customers, to any extent which appropriate government officials decide to be necessary. And finally, they suggest that most earnest consideration be given to the basic operating need for fullest coordination, which can only come by leaving the tremendous job ahead to the skilled and experienced operating staffs of the presently existing systems.

Some New Problems in Industrial Sales

By J. F. Gaskill

Sales Manager, Philadelphia Electric Company

WAR is here and that fact calls for extreme effort on the part of our Industrial Sales groups to help speed up production and to aid in the organization of industry for all-out effort.

The contribution of utilities to the Defense Program before the declaration of war was outstanding and needs no recapitulation here. Since the decision to fight has been made, our efforts will certainly be intensified with the increase in war effort. All-important industry will get the right service promptly, will be aided as much as possible in choosing applications that speed production and quality and will be helped to spread work through cooperation with the Contract Distribution Division of the Office of Production Management. These things and the thousand and one other questions that arise in the industrial market will be handled by the power salesman as no one else can but there is yet another way in which we can be of real service.

Some day this war will be over. The problems to be solved at that time will be difficult to say the least. If, while doing our utmost to answer the demands of a war economy, we can do something to help industry and ourselves to weather the transition from war to peace then we will have made another contribution of real value.

Therefore, in considering an analysis of the situation confronting industrial sales, I would like to think of it in terms of some of the problems involved in preparing for the future so that we will find ourselves in the most advantageous position to build load after the crash following the cessation of deficit financing.

These problems might not be too difficult if we did not know that some day after the war will be pay-day, and that the shrinkage of loads under such conditions will be of such magnitude that available markets will very probably be insufficient to compensate for the mortality and load loss in industry; not to mention the changes in buying habits, which accompany a shrinkage in trade, and their effect on other phases of our business.

The present questions in industrial sales which seem to be important in terms of the future might be listed as follows:

1—The handling of the industrial expansion attendant upon the war and the intensification of the Defense Program.

2—The question as to whether usual promotion is desirable or indicated in this phase of our business at this time and, if not, when should it be resumed.

3—The development of new applications which will lend themselves to selling when the going becomes tough.

4—The possibility of directing our sales now to those applications which are necessary to the normal operation of our customers' businesses so that the loads will continue with the business.

5—The establishment of our relations with our customers on the highest possible plane through the elimination in our rules, rates, practices and contracts of those things which cause unnecessary friction and irritation.

6—The adjustment of organization and training of personnel so that when the need is at hand our selling machine will be at the heighth of efficiency.

7—The study of our market so that we can direct that selling machine to the most productive spots when promotion is intensified.

8—The situation in which we will find ourselves with respect to competition when the war is over.

These points will be taken up and amplified one by one in a manner which, I hope, will provoke thought.

(1) DEFENSE INDUSTRIES

The coming of the war and the inauguration of the Defense Program introduced a great many factors other than increases in load. While this business is not strictly temporary it is, on the other hand, not permanent, and our investment practices and our rates are based upon a long term expectancy of load life for the industrial customer. Therefore, investments made for this type of business may be in jeopardy because of the short load life, and might result in a "white elephant" which would be, at least, a heavy burden in the future if such loads were accepted under the usual relations of investment to annual revenue without consideration of their semi-temporary character. This factor has been generally recognized in the industry and many methods have been evolved in various companies in order to meet the situation.

Loads of the character we are discussing may develop in any one of three ways such as:

(1) Expansion by an old customer whose normal business has been on our lines for years.
(2) The rehabilitation of an unoccupied plant.
(3) The building of a new plant.

The first situation, if handled too rigidly, may react unfavorably on future load building. Such plants are already a part of the system and there is a promise of continuity in the peace-time load. Furthermore, years of satisfactory business dealing have established a confidence which justifies liberal treatment. Some cases may be troublesome because of the size of the war load as compared to the basic business, but this does not effect the need for an approach which considers future sales.

The necessity for more and more protection intensifies as we deal with the new customer in the formerly unoccupied plant, although the fact that such plants are usually near our lines should reduce the difficulties, and becomes imperative when the negotiation is carried on with a new organization in an entirely new plant devoted exclusively to the production of war materials. These may be very large and are apt to be in undeveloped areas where investments would be unproductive under normal conditions.

Because of these variations in general conditions it would appear that the method of obtaining protection might justifiably vary between rather widely separated extremes of liberality and severity.

With this thought in mind I will take the liberty of offering certain considerations which, among others which will occur to readers, have some bearing on the choice of the method of obtaining protection. These are:

(1) The continuity of the basic business.
(2) The relation of the normal peace-time business to the war load.
(3) The stability of the management.
(4) Credit.
(5) The type of war load. Can it be can-

celled suddenly or must it be tapered off gradually?

(6) The relation between the total expense to the company and the revenue received over the years during which the customer has received service.

(7) The investment required and the expected revenue from the new load.

(8) The competitive situation.

(9) The kind of customer, i.e., private industry, Government owned or subsidized.

(10) The location of the plant with relation to probable system growth.

A consideration of the wide degree of variation that can occur in these items, as between different customers, forces the conclusion that each case might properly be settled on its own merits. That, while it is apparent that real protection is needed for the investments required for war loads, this protection may rightly vary from complete advance by the customer with return of salvage value only, to the assumption of the entire cost by the company where the relations between company and customer together with the ratio between past, present and expected investment and revenue are satisfactory.

We are in a seller's market with respect to these war loads. Many of our old, steady reliable customers who have been the backbone of our industrial business in good times and bad now ask us to answer their power problems. Among these, in the lean years to come, we will attempt to build load in a buyer's market. At that time the attitude of this market toward us may readily be influenced by the way in which we approach the problems of war loads today.

(2) PROMOTION

The question as to whether usual promotion is desirable in the industrial phase of our business at this time is undoubtedly debatable. I would, however, like to suggest that normal promotion is not apt to produce results because of the speed with which the customer is forced to make his decisions relative to expansion. He has no time to read literature and he is very prone to attain his objective with the best means at his immediate command. He is moving so rapidly that the pressure of the written word is not effective, therefore we are compelled to rely almost entirely upon the spoken word to direct his purchases toward that equipment which represents our best hope for continued load in the future.

This means that promotion is largely in the hands of the individual salesman who can, to a great extent, help the situation by persuading the customer to electrify where electrification will be most beneficial to us and to him. To put it in another way, the salesman with his knowledge of the processes in the plant can do the best job if he will utilize the limited time at his disposal to get the customer to electrify those processes which will be continued if the plant remains in existence after the emergency is over.

For example, electric heating which is installed today as an integral part of the plant processes has a very good chance to continue even though the production of the plant may be reduced. If the customer can be sold on and persuaded to install high intensity lighting or air conditioning as an aid to productive efficiency, he will become used to it, feel its necessity and may retain at least a certain percentage of it even though he may be forced to drastic economies later on. I have made specific mention of applications only to illustrate a thought which applies with equal force to others which can be incorporated as an essential part of the plant operating cycle.

Priorities and equipment shortages are restricting factors, whose presence in the picture does not indicate satisfactory results from organized promotional programs. In fact their increasing influence will tend to reduce the non-defense business to a minimum.

It is true that certain promotional activities may have reached a point where cooperation with manufacturers, distributors and dealers has been developed to such a great extent that the cessation of such promotional activities would be decidedly injurious. Stoppage of promotions of this kind might leave us in a position, when we come to renew the activity, where the rebuilding required would offset entirely the expense necessary to keep it in continuous operation. We feel, in Philadelphia, that this reasoning applies to our air conditioning and lighting work so that, while the value of the promotion in terms of new load may not be great during the period of expansion, the desirability of maintaining the effectiveness of the cooperating machines which have been developed warrants the expense of continuing these activities. This insures that the organization of these efforts will not suffer from inaction but will be tuned up and ready when sorely needed.

All of this tends to confirm the thought that the usual methods of promotion through advertising and campaigns do not hold much promise of help in industrial load building at present but should be resumed with emphasis near or at the transition from a seller's to a buyer's market when equipment and material restrictions are gone or about to go, and the market needs which have been unsatisfied because of them can again be emphasized. It also indicates the need for using the available time in the interim to prepare for that resumption.

(3) NEW APPLICATIONS

In our preparation for the more difficult times to come it seems to me that, hand in hand with our effort to maintain our selling machine at the highest possible state of efficiency, we should develop any available new application, which lends itself to selling in hard times, to a point where it will be ready for organized selling. Infra-red heating is illustrative of this thought. While numerous applications have been found for it the size of the market has not been determined. Much work must be done before Infra-red can invade the low temperature heating field to the degree which we hope possible.

Our investigations show that, when applicable, Infra-red is one of the cheapest applications to install in terms of dollar of customer investment per dollar of revenue to us. Often the customer saving in time, floor space and operating expense is startling. It may be that the magnitude of the field in which this application can be successfully made is not so great as we might wish. However, it holds such promise that we feel, in Philadelphia, that it should be explored completely during this time of expansion when we have the time, so that it will be at its maximum value as a selling tool when needed.

With all of these things in mind we have organized a special group in the Electrical Association, including the paint and ink manufacturers, to deal with the problems of local market development and ultimate promotion of Infra-red. Through this we hope to speed up the determination of the local market and to focus the combined efforts of the interested industries on promotion when the time is ripe.

While it is not exactly new, having been developed to the point where organized selling is possible, Fluorescent lighting offers great possibilities for the development of high intensity lighting. Up until the time that it was available the problem of heat was rapidly becoming serious in incandescent lamp installations and would have become, if it was not already, a real ceiling to the development

of light. With Fluorescent, however, the higher intensities can, we have found, be more readily sold, with the result that the 50-foot candle job is no longer a rarity and it is not over-optimistic to hope that lighting intensities may be pulled above this figure by promotional and selling effort in the future. Incidentally Fluorescent lighting does not lend itself to the practice which was so common in the last depression. Then it was easy to screw out a 100-watt bulb to be replaced by a 25-watt bulb. The capacity of Fluorescent tubes are a function of their length and an installation once made is more apt to stay with us.

Other applications might be discussed but these are sufficient to emphasize the fact that the new applications and higher lighting intensities which will help us in the future should, while we have time, be developed to a point at which the best possible results can be obtained from intensive promotion when conditions indicate the need.

Furthermore, it seems reasonable to assume that at that time selling will be more productive if it is directed toward those applications which represent the greatest operating economy to the customer and the lowest owning cost to him per dollar of revenue to us. Operating economy varies so widely between jobs that it does not seem useful to attempt to list applications in their order of value in this respect. The customer owning cost per dollar of revenue to us, for any given locality, should vary within narrower limits and I am therefore including the following table which is an attempt to evaluate a number of known applications for a specific locality in terms of customer investment and company revenue:

	Inst. Cost per Kw.	*Revenue per Kw. per Year*	*Inst. Cost per $ Rev.*
Air Conditioning			
Commercial	$300.00	$15.00	$20.00
Industrial	300.00	20.00	15.00
Electrical Heating			
Industrial	60.00	28.00	2.14
Midget	15.00	30.00	0.50
Solution	40.00	19.00	2.10
Lighting			
Incad. —Com.	16.00	35.00	0.46
" —Ind.	10.00	25.00	0.40
Floures.—Com.	200.00	35.00	5.71
" —Ind.	200.00	25.00	8.00
(Special)			
Infra-red	30.00	30.00	1.00
Electric Cooking (Heavy)	35.00	20.00	1.75

(4) DIRECTING SALES

The speed with which the market is expanding restricts our efforts in attempting to direct the work of the salesmen toward the electrification of processes necessary to the continuity of the customer's business. As was pointed out in discussing promotion, this speed forces us to depend on the individual salesman whose negotiating time is limited by the same factor, and whose selection of process and application is hampered by priorities and equipment shortages.

Therefore, while we may emphasize the need to direct selling effort to those things which will stick, the result will be a product of the ability of the salesman to select the process and application and the speed with which our organizations can give him technical assistance.

The salesman frequently has only one shot at his objective. For this reason it would appear that the percentage of success which he can obtain in directional selling at high speed is more closely related to the sales training and organization development of the past few years than to anything which can now be done. The industrial expansion for defense will have largely been completed before special training and plans could become effective.

(5) MARKET RELATIONS

When business falls off and purchasing power shrinks selling will become difficult. It will be more or less difficult as our relations with customers are good or bad. These relations, good or bad, cannot be established in a day nor are they determined by our behavior under fire. Our experience as an industry during the last decade offers, I believe, considerable support to this conclusion. Perhaps it is not out of place to suggest here that our methods of meeting market problems over a long period of years have more influence than anything we can do through proclaiming our virtue in times of adversity.

Now if we admit the foregoing, we must admit that we are creating, today, the market attitude of several years from now which will contribute heavily to the magnitude of the sales resistance that will have to be overcome. No one knows how severe the conditions will be in the future and if there is anything in our rules and practices which adds to the usual stumbling blocks of the salesman the resulting sales resistance may seriously affect production when we need it most.

It is, I think, just as important to reduce sales resistance in the market as it is to overcome the total resistance by selling. After all a salesman is only human and cannot surmount obstacles if they are too high. Those obstacles, however, high in the future, will be lower if our policies and tariffs lend themselves to flexible and satisfactory market relations today and every day.

It is rather easy to make a rule or to establish a practice which protects the company. It requires considerably more ingenuity and thought to make a rule or to establish a practice which protects the company and fits the market.

I realize that this is a subject which has been given much thought by everyone and that it has been, therefore, largely, covered. Nevertheless it seems so important that it has been included at the risk of seeming trite.

It may be particularly vital in considering industrial sales if we accept the thought that our general relations with the community in which we work are powerfully influenced by the manner in which we handle the medium and large industrial and commercial markets.

This idea is based upon two theories of behavior which may be worthy of some consideration. They are:

(1) That the majority of employees respect and admire their manager. Therefore, if he has a flash of temper and expresses himself violently each time the utility bill arrives, his opinion permeates the organization. The employees, not having a business of their own in which to exhibit this borrowed attitude, perform for the benefit of their families when the bill reaches their home.

(2) When the political opportunist holds a town meeting and takes the local utility for a verbal whipping, the thinking minority of his hearers are not necessarily convinced. They are likely to ask someone among their friends or acquaintances whom, they believe, is qualified by profession or connection to confirm or refute the statements of the politician. The person appealed to is almost sure to be an engineer or someone in the employ of our large or medium-size industrial and commercial customers.

In the mind of the inquirer this man knows what he is talking about. He believes in him, trusts him and accepts his answer as authoritative. The sum total of answers of this kind influence the men who influence public thinking and may easily have widespread reaction.

If the foregoing be true then our rela-

tions with our large industrial and commercial customers have an importance over and above their effect on this particular group. Therefore, even if we feel that everything is as it should be, a review of our practices and policies with reference to our large industrial and commercial market might well be profitable.

(6) ORGANIZATION AND PERSONNEL

Organization refinement and personnel training are obvious steps in the solution of future problems. When the time comes for the resumption of intensive promotion and sales pressure we shall be working in a depleted market distressed by the difficulties of making both ends meet. Under the pressure for economy, complaints and requests for help in reducing power bills will pile up. Under these circumstances the selling of new business may suffer unless we are prepared to care for these questions without interference with our load building effort. As our business has grown, necessary paper work has increased and may add to the amount of office work required of the salesman. He is employed and paid to sell new business and if he has to spend his time settling complaints which hold no promise of new business and there are many of these, or to sit at his desk over paper work, the time so required is lost in so far as load building is concerned. The same reasoning applies to other work such as reports, market studies, etc., which, while needed, do not, in the detail work necessary to their completion, involve sales contact. The salesman should know how to do these things and he should be maintained as the point of contact with the customer. There may be times when he should do any one or more of them during a specific job of load-building but the pressure on him should be to utilize his time so as to obtain the maximum number of sales contacts.

These things have, no doubt, occurred to everyone and the organizations which provide the flexibility required for specific territories have been set up. Territorial requirements dictate the character of the organization because a widely diversified industrial territory with a large number of small and medium sized plants certainly requires different treatment than an area embracing one or two industries and a few very large plants. This fact does not change the fundamental need for flexibility which will be even greater sometime in the future than it is now. Therefore, it is suggested that any refinements which can be made now and brought to smooth operation during the present expansion are a present problem which, if solved, will ease future stress.

Personnel training is brought into the picture for the same reason. It is an old subject, familiar to everyone. Yet, hand in hand with perfected organizations, our personnel should be brought to an even higher state of training in order to meet the conditions they will face.

The industrial salesman is a sales engineer rather than a salesman disposing of a packaged product. The technical side looms large, is complicated and the answer must be right if the salesman is to earn the confidence of his market. We can insure the accuracy of the technical study through the help of our flexible organization and we can train him continuously in the general knowledge of applications, by the same means, in his everyday work.

But, after the technical answer is obtained, the salesman must persuade the customer to accept it. This is an art, not a science. One man may do it successfully by "bull in the china shop" methods, another may be successful as a smooth, polished diplomat. Either would fail disastrously if he attempted to copy the method of the other. The salesman must be himself to carry conviction and inspire confidence.

Furthermore, the industrial salesman is apt to be an extreme individualist, not only because of the foregoing, but because of the fact that the complication of his negotiation makes it necessary to depend on him to a very great extent for the exercise of judgment in conducting his work. In other words, while he may be given a job and checked for attention and results, the negotiation, which may last for a year or more, must be in his hands because the details, personalities and atmosphere of the particular case cannot be known as thoroughly to anyone else, and are often quite involved.

In training such men school-work is of doubtful value. If, by reiteration and illustration at regular sales meetings, we can induce these men to analyze their work; to ask themselves at the end of the day—Why did I get that job or Why did I lose it—we would accomplish much.

In any event, no matter how we decide to do it, the bringing of our sales force to the highest possible level of sound training, while we have the opportunity, is important in terms of the future.

(7) MARKET ANALYSIS

Market analysis should be stepped up if we are to get the best results from perfected organizations and highly trained man-power. A well tuned machine loses a good part of its effectiveness unless we know how and where it is to be used. As a matter of fact the character of intended use has a definite relation to the organization and training. Our experience in the last depression indicates that, when we enter such a period of readjustment, our market is primarily interested in those things which promise economy in investment and production cost or those things which make their business or product more attractive to their market. It is true that we know much about some applications which lend themselves to selling along these lines. Much was done in the late difficult times through "Better Light-Better Sight," heating and air conditioning, etc., but the difficulties of the future will be greater than any we have yet faced. Therefore, it is suggested that we should know more about the market for the applications with which we are familiar, more about the field for new applications which are now in course of development and more about placing ourselves in closer liaison between the manufacturer and the market so we will know what he is doing in his laboratory and be able to bring market needs and possibilities to his attention.

This may be too ambitious a program to be handled by uncoordinated local efforts. If the thought has merit perhaps some national action in supplying a focal point for the coordination of manufacturer contact and proper division of local work might be worth consideration. Something has been done along these lines; notably in the research program handled through the Battelle Memorial Institute. This, however, was an engineering study by engineers. It is suggested that the work which we are discussing could better be handled as a sales problem.

If we could find three or four things which have a small percentage of the possibilities of Infra-red and of lighting and if those things could be developed during the time when we are enjoying the fictitious prosperity of war business, then, when this temporary business disappears, we might have several selling tools to mitigate the effect of the load losses which are inevitable. This calls for special study of the markets to discover

those applications which are not yet developed and close cooperation with the manufacturer to get the benefit of his thinking along new lines, and to bring to him any knowledge of our market conditions which would be helpful in guiding the development of new uses upon which he is experimenting.

(8) COMPETITION

Some time during the aftermath of the war competition should become stiffer than ever. While turbine development will undoubtedly continue, this type of competition should not receive unusual impetus from the war, although we will contend with more second-hand machines and the continued threat of high pressure steam and the topping turbine. It is in the internal combustion field that the greatest opportunity for difficulty lies, with emphasis on the diesel engine.

Plants, the investment for which will be largely written off during the war, are being built all over the country to build internal combustion engines of all kinds. Enormous quantities of these engines are being absorbed by the defense effort. Much will be learned about improving their design through their performance in rugged work. After the war these plants will be searching for an outlet for their product at reduced prices and quantities of distress merchandise in the form of engines, no longer needed by our armed forces, will flood the market.

While the diesel engine, under normal conditions, has not been a really serious competitor, such a combination of circumstances may readily generate a real problem in a market crying for economy.

There does not seem to be anything which can be done now to meet this possibility outside of building up market relations and keeping in mind the effect of possible rate changes.

Finally the entire picture of competition in the future may be colored unfavorably because of the need for utility investments during an era of high prices. This fact, combined with falling loads, may force static or rising rates when other prices are falling. The slow turn over in the utility business does not tend to immediate cost response to variations in prices.

This concludes the discussion of the eight items outlined at the beginning of the paper. There are many others of an immediate nature such as the holding of personnel attracted by lucrative defense jobs, replacements required because of the draft and the calling of Reserve Officers to the Colors. Priorities and equipment scarcities are real problems while, in some places, the fantastic rate of increase in industrial loads may cause some concern as to available capacity.

Over all, there is the constantly increasing effect of regulation, taxation, increased prices, rate reductions, and war. These things obviously are all pretty much beyond our control. Such sales problems as are generated by them seem, if you agree, to lend themselves better to individual local treatment in the light of the local conditions obtaining at the time and the needs of the war effort. It is suggested, however, that our ability to hold an adequate organization may depend, to a great extent, on the degree to which all of these things affect our business.

On the other hand, a spending philosophy was embraced by the Government a decade ago. Fundamentally it is not so different from the idea of the twenties when commercial credit was used up in the attempt to disguise the basic economic unbalance. The most important variation is that deficit financing has been taken from the individual citizens to a large extent and adopted as a governmental function to be exercised for the same purpose. The possibilities of this procedure are arresting to say the least.

It is possible that the National basic unbalance which paralyzed trade after 1929 was due to an unbalanced wage scale which made it prohibitive for large groups to buy the products handled by others except by the use of credit. If this is the case it is not reasonable to expect the painful adjustment of this unbalance to proceed as long as credit is available. On the contrary since the use of credit enables the factors, which caused the unbalance, to continue to operate, it is reasonable to look for an increase in unbalance which necessitates the use of more credit to maintain trade volume.

It may be that wages are the mainspring of prices. If we consider an article which is wanted and can be produced for wide usage; then, outside of a speculative value in the untouched raw material and the slight variations due to changes in available supply, the cost is entirely due to the price of the labor that touches it or goes into the buildings, machines and transportation systems necessary to produce it and bring it to the ultimate consumer. Management is paid in terms of the labor it saves by direction and planning, salesmen for the prompt acceptance of a product which increases production volume, thereby decreasing the units of labor per article, and other necessary business functions are similarly related to labor savings.

If we assume these things to be true we may expect, at some time in the post-war period, a situation similar to or worse than that which confronted us after 1929 and the speed with which we are now moving merely shortens the interval between now and then. The only indeterminate factors seem to be "when" and "how much."

Therefore, I have confined myself, principally, to emphasizing the need for doing those things which might prepare for the post-war period when we and all industry will face situations which will be more exacting than any yet experienced. It is true that these situations may not develop because of the impact of conditions now unknown. If this should happen, as everyone hopes, the preparations would not be useless as they would be reflected in improved operations in a happier market. It might be suggested in conclusion that if the thoughts expressed are pertinent in so far as industrial sales are concerned, their effect on other phases of our business might be worthy of consideration.

Correction

IN the review of Dr. M. H. Waterman's book "Economic Implications of Public Utility Holding Company Operations," appearing on Page 469 of the November EEI BULLETIN, the word "proffered" was inadvertently dropped in the last sentence of the third paragraph. The sentence should have read:

"Testimony based on the facts reported in the study was admitted as proffered evidence by the Securities and Exchange Commission this summer in the company's challenge of the reasonableness of Section 11 of the Holding Company Act."

The SEC accepted the prepared testimony of Dr. Waterman concerning the subjects covered in his book as a proffer of evidence only and not as testimony.

EEI PUBLICATIONS

A newly revised price list of all EEI publications is available upon request to

EDISON ELECTRIC INSTITUTE

420 Lexington Avenue, New York, N.Y.

PRIZE AWARDS IN 1942

Administered by Edison Electric Institute

The Prize Awards Committee of the Edison Electric Institute is pleased to announce the following prize awards, offered for open competition by all electric light and power companies in the United States, or by employees of the companies. Closing date for entries in the several contests is April 1, 1942. Please note that most awards cover acts or accomplishments occurring during the calendar year 1941. Detailed information on each of the awards may be obtained from the Secretary of the Edison Electric Institute, 420 Lexington Ave., New York, N. Y.

Of Interest to Chief Executives

CHARLES A. COFFIN AWARD—Advancement in Operation and Plant

A gold medal, known as the Charles A. Coffin Medal, donated by General Electric Company, is offered for the year 1941 to the public utility operating company, within the United States, which has achieved the greatest advancement in its operations and physical plant, thereby making a distinguished contribution to the development of electric light and power for the convenience of the public and the benefit of the industry. The company awarded the medal will also receive $1,000 for its employees' benefit or similar fund.

THOMAS W. MARTIN AWARD—Rural Electrification

A bronze plaque is offered by Mr. Thomas W. Martin, President, Alabama Power Company, to the public utility operating company within the United States which during the year 1941 has shown the greatest contribution to agricultural advancement within the company's territory through promotion of uses of electricity, development of rural load, cooperation with other agencies, extension of rural lines, organization and planning for development of rural electrification.

CLAUDE L. MATTHEWS AWARDS—For Valor

For acts of devotion to duty by public utility company employees wherein outstanding courage has been shown in efforts to maintain important electric service or to restore service in the shortest possible time, three cash awards of $150 each are offered for the year 1941 by Mr. Claude L. Matthews, Vice President, W. N. Matthews Corporation. A citation and an appropriate lapel decoration will accompany each cash award.

Recommendation for the award must be submitted by the President or acting executive head of the company in which the person recommended is or was employed, and it is urged that such recommendation be submitted as soon as convenient after occurrence of the act of valor.

Of Interest to Sales Executives

AUGUSTUS D. CURTIS AWARD—Lighting of Commercial Buildings

Certificates and cash prizes, donated by Messrs. Darwin Curtis and Kenneth Curtis of Curtis Lighting, Incorporated, in memory of Augustus D. Curtis, are offered for distinguished contributions by public utility operating companies toward the advancement of higher levels of illumination in the interiors of commercial buildings during the twelve months ending March 1, 1942. First prize: a certificate to the winning company and $200 to the individual responsible for the achievement. Second prize: a certificate to the company and $100 to the individual responsible. Third prize: $50 to the individual responsible for the achievement. Fourth prize: $25 to the individual responsible for the achievement.

GEORGE A. HUGHES AWARD—Domestic Electric Cooking Load

Three prizes are offered by Mr. George A. Hughes, Chairman, Edison General Electric Appliance Company, Inc., for distinguished contributions made during 1941 by public utility operating companies within the United States to the development of the market for electric ranges through direct or cooperative promotion or selling, or both. First prize: to the company, a trophy; to the individual or individuals responsible, $500. Second prize: to the company, a certificate of recognition; to the individual or individuals responsible, $300. Third prize: to the company, a certificate of recognition; to the individual or individuals responsible, $200.

LAURA McCALL AWARD—Achievements of Home Service Departments

An engraved plaque, two illuminated parchments and a total of $175 in cash, donated by McCall's Magazine in memory of Laura McCall, are offered for outstanding achievements by the Home Service departments of operating public utility companies in the advancement of electrical living in the home through the promotion of electrical appliances and home lighting equipment. Companies winning first, second and third prizes will receive, respectively, the plaque and the parchments; the Home Service Directors or the directing heads of the Home Service departments reporting the achievements will receive the three cash prizes, which are $100, $50 and $25. The contest period is the calendar year 1941.

Of Interest to Engineers

McGRAW PRIZES . . . . . Engineering

Cash prizes of $250, $150 and $100 donated by Mr. James H. McGraw, Honorary Chairman, McGraw-Hill Publishing Company, are offered for the three most meritorious papers submitted on any Engineering or Technical Subject relating to the Electric Light and Power Industry.

Leaflets covering the McGraw prizes are available. Executives are invited to request from the Secretary of the Institute copies for distribution to members of engineering staffs.

All papers, exhibits or statements submitted in competition for the 1942 prizes must be forwarded to the Secretary, Edison Electric Institute, 420 Lexington Avenue, New York, N. Y., by April 1, 1942.

All prizes will be announced and awarded at the 1942 convention of the Edison Electric Institute.

PRIZE AWARDS COMMITTEE

H. P. LIVERSIDGE, *Chairman* JAMES E. DAVIDSON
CHARLES W. KELLOGG LEWIS B. BEATTY, *Secretary*

Cooperation of Utilities in Serving Defense Loads

By J. H. Coates

Industrial Sales Consultant, Ebasco Services Incorporated

A paper presented at Industrial Power Committee Meeting, Southeastern Electric Exchange, Atlanta, Ga.—Oct. 31, 1941

WHEN we discuss utility Industrial plans and problems today, we can be sure that the problem we are discussing is one of extreme importance to our country, our customers and our companies. For it is American industry, supplied by utility gas and electric service, that is being called upon for unexampled production of war materials and civilian goods.

In past years, the big job of American business was to find or create a market sufficient to absorb a reasonable proportion of its production capacity; the number one job today is that of increasing output fast enough to satisfy the demand. The one fact that supersedes all others is that we have a war to win; and that by and large this victory must be won by the *existing* plant facilities of the nation. This is the only way in which this job can be done quickly.

As the Defense Program passes from the "tooling up" stage to the "all out production" stage, American industry will encounter new difficulties and new opportunities. This production effort is one in which every industry should have a share; first, because it is necessary to distribute the work over more existing plants in order to increase production, and, second, because the very *existence* of many smaller plants depends upon defense orders either as prime contractors or as sub-contractors.

The importance of spreading defense orders to existing smaller industries through sub-contracting has been discussed rather completely, and it is mentioned again here only because of its extreme importance. In addition to the patriotic desire of everyone to share in the defense of his country, small industries face the very real possibility of having to close down unless defense orders are obtained. With the normal source of raw materials and, in many cases, the market, no longer available to such smaller industries, and with their skilled labor attracted by defense industries, they need to procure defense orders to stay in business.

Such shut down of peace-time industries confronts gas and electric utilities with the possible loss, not only of Industrial revenues, but also of companion Commercial and Residential revenues from customers dependent on those Industrial payrolls. Furthermore, the number of these "shut down" industries which will be able to resume operations in the troubled post-war era is doubtful, and therefore the loss may be permanent. The importance of utility Industrial sales staffs assisting Industrial customers to obtain defense business, therefore, seems to be paramount in 1942.

Post-War Planning Is Also Important

In addition to the intensive thought and effort being given to the solution of the immediate problem of production, industry is also *planning to meet post-war problems*. Electric and gas utility Industrial Sales Divisions, likewise, may well give consideration to including post-war planning in *their* 1942 programs, along with efforts aimed at solution of the immediate problem of keeping the armament industry going at full blast. Such individual planning would thus be laying the ground work for the development of new outlets to absorb what would otherwise be surplus capacity in the future.

Electric utility Industrial sales forces, especially, face a year of many opportunities which may be capitalized upon because Industrial customers are carrying a substantial share of the Defense effort. By helping to solve industry's problems, utility Industrial sales executives, and their men, will, to an important extent, be taking decisive steps to solve their own company's problems also.

Helping utility Industrial customers under today's conditions, however, will depend more and more on the ability of all salesmen to—"Sell Ideas to Solve Utility Problems!" This is a natural outgrowth of the increased importance of customer relations as a primary factor in the business growth and development, and is intensified by present conditions in a modern business economy. Successful utility Industrial salesmen have always been active and skillful at selling ideas—ideas that assure their customers the maximum beneficial use of utility services and the highest understanding of the direct and collateral advantages of such services; ideas that reduce costs, improve products, speed up production and reduce rejects. In addition, in 1942, it may well be that other and still broader ideas can appropriately be added to the list. It would appear that the job ahead for utility Industrial Sales Departments in 1942, generally, is broader in scope and more important than ever before.

There are two sets of problems in connection with the Defense Program with which we, as salesmen, are most concerned—(1) Company Problems, and (2) Customer Problems. While the title of this presentation would lead us to believe that our chief concern was with Company Problems, it is essential for us, as salespeople, to think also of Problem 2—Customer Problems.

As salesmen, we are experienced in dealing with our customers and their problems and we are also experienced in interpreting the company policies to the mutual interests of both. It, therefore, becomes entirely fitting that we first review the problems and the causes behind them in order to arrive at policy determinants. Then, let us review our policies to ascertain the extent to which they fit today's needs, and in so far as possible, the needs of tomorrow.

Company Problems and Their Causes

The National Defense Program has placed new and heavy burdens on the utility industry. Merely listing them may serve to clarify our thinking concerning them and their relation to policies necessary to solve them:

—Increased regulation, increased costs and increased taxes—these factors have been developing as major problems for years. Now their weight is gaining at an accelerated pace.

—Short-term loads, semi-fixed rates, poor deliveries on equipment, large loads at "give away" prices—these are the immediate and temporary problems.

—Government competition; and planning for the post-war period—these are problems of a long-range nature.

Let us consider the second group as being the ones which are of greatest immediate significance today: Short-term loads—poor deliveries on equipment—large loads at "give away" prices—semi-fixed rates.

Despite confused thinking on the sub-

ject, the utility industry is not *normally* called upon to serve all of the needs of the community. In normal times we are called upon to serve practically all of the Residential, Commercial and small Industrial loads, but one-third of heavy industry *normally* supplies its own power requirements.

Many large industries normally supply their own power requirements economically due to the very nature of their processes. "By-product power" has long been recognized as the logical solution in many heavy industries. Other heavy industries, especially in the chemical and metallurgical fields, by the very magnitude of their operations are able to produce power in their own plants with economies that match those of many of our own generating stations.

But now, under today's conditions, we find many of these industries, which, under normal conditions, would generate their own power, turning to us to supply them. This condition is brought about because of the short-term nature of the defense loads and because of the desire of industrial management to maintain capital liquidity, even if it would mean asking someone else, like the local utility, to do just the opposite. Other contributing factors are, of course, slow deliveries on generating equipment and the possibility that the expanded features of the industry will no longer be needed after the emergency, or do not readily lend themselves to conversion to peace-time production.

Utilities also face the serious possibility of being left "holding the bag." Unless it is possible for utilities to rapidly amortize the investment necessary to serve these short-term loads, or unless these loads themselves bear a large share of the cost to serve them, this investment must carry over into the utility's rate base. Such a condition will, of course, result in inordinately high rates for all customers or the utility must sell service at a loss. In this connection, it is worth noting that newspaper clippings claim that some public power agencies have adopted the policy that defense loads should fully amortize cost of facilities to serve them, in a very short period.

However, utilities can view the problem from a broader viewpoint. Capacity installed in utility generating stations is less wasteful. Better use can be made of capacity due to diversities, interconnections, etc. Furthermore, the over-development to serve defense loads may be considered only temporary and can be absorbed *in time* through the promotional and load-building activities of the utilities. But still, in the utility industry as in all other businesses, it would seem to be a fair principle that the extraordinary costs of carrying special defense burdens should be paid as defense costs now; and not saddled on future normal customers.

We, however, face the fact that a large portion of the country's increased manufacturing load must be supplied by the utilities. With this condition facing our industry, we must watch carefully the effect on our capital structures, our cash positions and our income statements.

In viewing our industry's over-all problems, what is needed most of all is a realistic appraisal of where we stand. The industry *is* ready to serve—is ready to a far greater degree than almost any other industry. However, we still have an important responsibility to our customers and our investors. While we will never lose sight of these responsibilities, we now have a far greater responsibility—to our country and its defense needs.

The Problems of Our Industrial Customers

In order to gain a clearer perspective, let us leave the subject of utility problems for a minute and quickly review some of the problems which face our Industrial customers:

—More Production, Change of Product, Priorities and Substitute Materials.

—Increased Demands of Labor, Threat of Greater Governmental Control and Increased Taxes.

—Increased Material Costs and Planning for the Post-war Period.

Surely our Industrial customers have their share of problems and it is easy to see why they do not want to be burdened with the added problems which accompany the generation of power, especially where it may require large new costs for equipment useful only for too short a time to amortize its costs during such a brief period. They are perfectly willing to let the utility company shoulder that responsibility. Furthermore, any of their other problems which the utility company can assist in solving will reduce the burden of the industrialist.

Many of these problems do lend themselves to at least partial solution by utility service, and here is where the utility Industrial Sales Department can help the customer and the company.

What Utility Industrial Sales Departments Can Do About It

Of course, the selection of activities which utility Industrial Sales Departments will employ in solving their customer and company problems, in connection with the Defense Program, is largely a matter for each company to decide for itself. The following ideas are offered only as a summary of suggestions which you may wish to consider in handling your customer negotiations during these trying times.

Make Short-range Plans Flexible—The rapidity with which world-wide events are happening, and the uncertainty as to what the future holds forth, would seem to indicate the need for and desirability of making 1942 sales plans flexible. The idea was well expressed by Mr. Burton Bigelow, who acted as Chairman of an American Management Association Conference devoted to "Developing the Most Effective Sales Force," when he said:

"With the world in a state of confusion, the greatest need is for planning. Don't throw away any of the old principles. Keep your plans fluid (flexible). It may be necessary to make a number of short-range plans. Study them as carefully as possible and store them for immediate use when the time is ripe. It is also necessary to have substitute plans available in order to be agile and to meet rapidly changing conditions. Furthermore, keep in mind that 'some day the war will be over.'"

It would, therefore, seem most worthwhile that each Industrial Sales Manager give consideration to the desirability of making flexible plans for the operations of his department to meet changing conditions. Such plans would, naturally, be designed to deviate as little as possible from the path leading to the accomplishment of long-range objectives, while still meeting immediate goals satisfactorily.

Long-range Planning Is Essential, Too!—In addition to having such short-range flexible plans to meet whatever conditions may arise in 1942, it is still important, however, for utilities to have sound long-range plans and definite long-range objectives. Such long-range plans are particularly essential for potential use in solving post-war problems and in taking up the slack during any return to peace-time economy. Long-range plans might include provision for the solution of such problems as:

—The disposal of utility energy and capacity which will be released when the present emergency requirements no longer prevail.

—Meeting competition from new power plant equipment which may be available at low cost due to manufacturers of this equipment being tooled up for mass production and desirous of continuing the volume manufacture thereof after the war emergency subsides.

—The possibility of a large amount of second-hand competitive power plant equipment being made available from war surplus stocks, or from war industry establishments which are shut down when peace comes.

—Meeting competition from expanded Government power facilities.
—Building general industrial activity in the area served to protect utility investments and revenues.

Unlike many other industries whose defense undertakings have been financed out of increased profits or by arrangements with the Government, the investment of the utilities, in new plant, becomes fixed capital which needs to earn its way in the future. For this reason, it will be important that a market be developed quickly for any electric or gas capacity which may be released through curtailment of defense industries. Making plans now to achieve such goals on a sound basis, may, to a large extent, obviate the necessity for future selling at distress price levels which may prove uneconomic and chaotic.

Solving Immediate Problems—Let us now consider some of the steps which might be taken by the Sales Department to solve immediate problems with respect to Defense projects.

Industries whose output will carry over into post-war periods or whose war-time production can be readily converted to peace-time production may be desirable prospects for long term contracts provided their production is not such that "by-product" power is a factor.

Some short term loads might better be served by competitive fuels. This possibility is worthy of exploration by most utilities whether they are combination gas and electric companies or not.

Of course, it is self-evident that a large number of small industries make for a more stable industrial community than a few large ones. It is also self-evident that we should strive to obtain long term industries or those whose equipment lends itself readily to conversion to other than war materials production.

You power men in the southeast have had some experience getting customers with power plants, some of which had been abandoned, to contribute their output to the local power reservoir of the territory. That is another idea which might be more intensely studied. At least it might be well to have the facts as to capacity, connections and conditions of this equipment available should the need arise.

One of the greatest bulwarks this industry has to fall back on—one of the things that has made it great—is its interconnected high tension system. The possibilities of this interconnection are being explored to the utmost to make sure that it is being used to the greatest possible extent.

Salesmen Must Get Full Price for Service—Utility management has come to appreciate the fact that their Industrial salesmen can be relied upon to perform unusual services. For this reason, they can be expected to sell industrial loads at their full value.

Judged by any standard or measure of value, utility Industrial gas and electric service is *worth more* today than ever before! This point is well brought out by an editorial on "Cost and Value of a Service," in the issue of the *Wall Street Journal* for April 21, 1941, which said:

"Theorists in the matter of rate regulation in public utility service have generally regarded the 'reasonable rate' as determined by two factors, namely, 'cost of service' and 'worth of service'. Cost of service includes the factor of 'return' on 'value' of property used. *Worth of service is the factor that governs volume of use.* It means the 'value' of the service to the user."

Selling utility electric and gas Industrial service on the basis of its *value* assures greater beneficial use by the customer, a fair return to the utility company, and a better over-all system balance so that most advantageous rates may be made available to small Residential and other customers.

In some cases in the past, undue weight has, perhaps, been given to consideration of so-called "increment costs" of serving increment loads, rather than total or real costs of such electric and gas service. Recent developments have shown that some of the new loads being added to utility systems may prove to be higher cost loads. This possibility is *especially important* where capacity in generating, transmission and distribution facilities is approaching usable limits and may require replacement with "higher cost and hard to get" equipment.

The need for a more logical approach to the "pricing of service" for unusual loads is indicated. Rather than approaching such pricing on an incremental basis, it is suggested that the Sales and Engineering Departments cooperate fully with the Rate Department in the basic job of the latter department in formulating a pricing policy which will take into account all appropriate costs to assure a fair price for the valuable service rendered.

Such an appraisal will materially contribute to the solution of its company's basic economic problems, by improving its revenue and cash position.

The "plus advantages" of utility Industrial service take on new and increased values to our Industrial customers in times like these. Let us take our list of plus values off the shelf, dust it off, rearrange the values to fit today's needs and put it to work. A recent study made by "Factory Management & Maintenance" showed that the old "number one" sales appeal, "Profit," is now relegated to relative unimportance. The new number one appeal is "Increased Production." Are we still overemphasizing those appeals that have little weight? Mr. B. M. Davis is making a study of this very idea in Mississippi now. He is asking his customers which of the collateral values of Mississippi Power & Light Company service are most important to them.

We mentioned a few moments ago the threat of rising prices. This threat is very real. Many manufacturers are including, in their contracts, so-called tax clauses and commodity clauses. An increasing number of utilities are doing likewise. Consideration of adoption of such clauses, in so far as your local regulations permit, is commended to you.

Salesmen Take on New Duties—Considerable space is being given in magazines, such as *Printers' Ink, Industrial Marketing,* and others, to the function which advertising can play when the advertiser is temporarily unable to fill his orders for normal output. Similar thought is being given by utility sales departments as to the functions which their Industrial salesmen can perform on the premises of customers who are now using their equipment to full capacity or who cannot get delivery on additional energy-using equipment.

Just as advertisers find it necessary to continue to keep their names before those who have been their customers, in order to obtain their business in the future, so, to an even greater degree, it is important that utility Industrial salesmen carry on the buyer-seller relationship with their customers. Because the advantages of utility service take on new significance to users, now is the time that proper evaluations of those advantages can be sold. Such evaluations in dollars and cents might well be obtained *now* and filed in Customer Record Files against such future time as they may be needed to resell the customer.

Utilities are being called upon, to an increasing extent, to supply large blocks of power and fuel at points sometimes far removed from company lines. Some of these loads are of a permanent nature and others are, or may be, of a definitely unstable and temporary nature. Negotiations for service to these customers

along sound financial lines afford the Industrial salesman a fundamental opportunity to conserve utility cash, in 1942, when such cash conservation is of the utmost necessity.

Perhaps now is the time to review our so-called secondary contracts to see how many of these, not serving defense industries, can be dropped. Many of these contracts, when analyzed in the light of today's conditions, return very little net. Surely there is no place for such business when capacity is so valuable.

In fact, now is an excellent opportunity for us to firm up our entire Industrial rate structure. Now, when our customers have a better realization of the value of our service, is the time for many of us to embark upon rate standardization programs. In fact, now is the time for us to do many of the really fundamental things, which lack of time or other considerations have prevented us from doing before.

Modernize Industrial Selling Methods—Present and possible future conditions call for a higher degree of utility Industrial selling skill, as well as for any requisite modernization of selling methods and sales appeals. This point was emphasized by Mr. C. A. Eastman in a paper on "Selling Utility Industrial Services Under Today's Conditions," which he presented at the Edison Electric Institute Sales Conference in April. In that paper, Mr. Eastman suggested a philosophy of selling and a type of approach which should go far toward fitting the utility Industrial salesman for the job of the current period and the future. He said:

"To be able to sell effectively under *Today's Conditions,* utility Industrial salesmen must keep abreast of the national and international factors affecting industry, factors affecting specific industries and specific customers now, and be able to interpret their future effects, and to create industrial sales appeals from this knowledge. Today, *salesmen need to be industrialists.* This is a challenge and an opportunity for Utility Industrial Sales Managers and Salesmen to meet successfully *Today's Conditions.*"

Such a broad-gage approach to overall Industrial problems is needed to meet rapidly changing conditions and to be of real help to customers in 1942 and succeeding periods.

Industrial Development of Territory Takes on New Significance

When viewed from a realistic point of view the utility company and its community have many common interests in connection with industrial development activities. An important feature of industrial development, which many be-

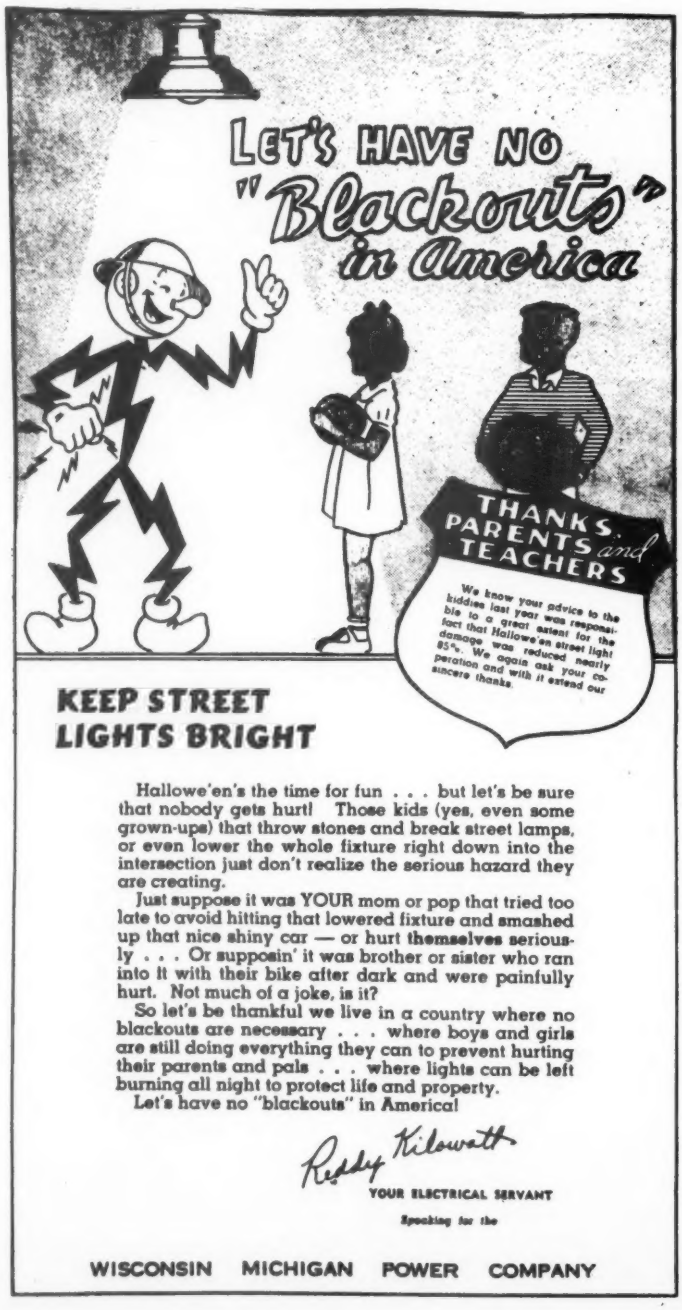
(*Continued on page* 503)

Hallowe'en Appeal Stops Broken Street Lights

ON Hallowe'en night in 1939 the Wisconsin Michigan Power Company experienced 58 street lights knocked out in the city of Appleton and some lighting fixtures lowered to the pavements, which resulted in serious automobile accidents—all caused by pranksters, both youngsters and grown-ups.

In an attempt to better this situation in 1940, the company ran a newspaper advertisement prior to Hallowe'en in which Reddy Kilowatt stressed the hazards to life and limb in breaking street lamps, and made a friendly appeal to the public and especially to the youngsters and their mothers, fathers and teachers for cooperation. As a result only five street lights (causing no accidents) were knocked out during Hallowe'en, 1940.

This year the appeal was made again. Score: no damaged street lights; no accidents on Hallowe'en, 1941.


LET'S HAVE NO "Blackouts" in America
THANKS, PARENTS and TEACHERS
We know your advice to the kiddies last year was responsible to a great extent for the fact that Hallowe'en street light damage was reduced nearly 85%. We again ask your cooperation and with it extend our sincere thanks.
KEEP STREET LIGHTS BRIGHT
Hallowe'en's the time for fun . . . but let's be sure that nobody gets hurt! Those kids (yes, even some grown-ups) that throw stones and break street lamps, or even lower the whole fixture right down into the intersection just don't realize the serious hazard they are creating.
Just suppose it was YOUR mom or pop that tried too late to avoid hitting that lowered fixture and smashed up that nice shiny car — or hurt themselves seriously . . . Or supposin' it was brother or sister who ran into it with their bike after dark and were painfully hurt. Not much of a joke, is it?
So let's be thankful we live in a country where no blackouts are necessary . . . where boys and girls are still doing everything they can to prevent hurting their parents and pals . . . where lights can be left burning all night to protect life and property.
Let's have no "blackouts" in America!
Reddy Kilowatt
YOUR ELECTRICAL SERVANT
Speaking for the
WISCONSIN MICHIGAN POWER COMPANY

What Are You Doing To "Keep Them Rolling"?

By S. G. Page

Automotive Manager, Philadelphia Company and Subsidiary Company

INGENUITY, foresight and constant attention will do much to help the utility automotive fleet operator "Keep Them Rolling." Every one connected with automotive transportation should now be aware of the problem that must be faced in the immediate future.

Since the creation, in July, 1941, of the Central Motor Transportation Committee reporting to Mr. Ralph Budd, Transportation Commissioner of the Advisory Commission to the Council of National Defense, planning has been undertaken to facilitate necessary motor vehicle operation under war conditions. This problem is no longer a figment of the imagination but a grim reality. Regional Motor Transportation Committees have been established in the sixteen Interstate Commerce Commission Bureau of Motor Carriers to provide the Central Committees with first hand information and advice. Each of these regional committees has a representative from the utility industry. Cooperation with these regional committees will do much towards alleviating or solving your own transportation problems since through this advisory channel OEM, OPM and other governmental agencies will receive their information on the nation's transportation problem.

As can already be observed much more attention is being given by the Government to keeping an adequate supply of heavy transportation equipment than is being accorded the light truck and passenger car. Such consideration is of course primary in the transportation problem but it accordingly gives the fleet operator a greater problem to cope with since the utilities have generally during the last ten years, through careful planning and engineering, been able to switch most of their operations from heavy to light vehicles. This does not mean that the lighter vehicles will not receive due consideration but it does mean that there are many points where the utility operator can attempt to work out his own salvation instead of asking for help from already over-burdened defense agencies.

Most of the means of husbanding automotive equipment and accessories are old stories to many of the operators. This article is not written as a panacea for the fleet operator nor with the thought that it contains any new or novel ideas. This same subject has been treated and discussed for many years at meetings of fleet operators, always however from the standpoint of fleet economics and not, of course, in the light of the restrictions and compulsions that make military needs paramount. A recognition of the restrictions that are fast developing as a result of the war is essential if the transportation requirements of a given operator are to continue to be adequately and satisfactorily supplied. Since many of the utility transportation men have not been active in the technical societies fostering such discussions and since those who have will now have a greater urge to still further study their operation, it is well to briefly outline topics of a conservation nature which while they have already received consideration, can now stand a further and more careful review.

Conservation of Equipment

This heading immediately suggests several sub-headings.

a. *Extended life* may be the most important since it is evident that there will be much less new equipment to draw from and rationing has as yet not been applied to light trucks and passenger cars. While this may change it is the duty of every fleet operator to be as small a burden as possible in a greatly restricted production program.

1. Preventive maintenance is probably the largest factor in extending vehicle life. Those operators who do not already subscribe should and those who do should be sure that their present policy is sufficiently comprehensive to materially lengthen vehicle life. You may now be able to justify more tune-up effort and additional attention to details.

2. Replacement point has been a matter of cost analysis and done at the point where the total maintenance cost per mile and depreciation cost per mile gives the lowest net result. Extending the replacement point may hurt your vehicle cost per mile, but it will certainly be necessary if we are to live within our restricted production. It then behooves us to keep this equipment in sufficiently better condition to be able to get the additional miles. Those operators who in the past have been compelled for financial reasons to run vehicles past what is considered to be the most economical trade-in point can tell you how surprised they were as to the additional miles that were obtained at a very small increase in unit cost. This statement is, of course, without respect to standard of service.

3. Cooperation on the part of the operator can probably do more than your maintenance efforts in extending the life of a vehicle. Frequently the operating departments have the idea that any transportation problem is the sole worry of the transportation department. It is time to sell such operators and operating department heads on the extent to which they can be a part of this program. Driver education and instruction in vehicle care therefore deserves added attention.

4. Cooperation on the part of the maintenance men now assumes added importance. Now is the time to sell your mechanics on the idea that the prolonged life of a vehicle or preventing needless waste of time and parts assumes the same importance as making guns or ammunition. Be sure you put this problem up to your own organization.

b. *Pooling operations.* This second general heading on husbanding equipment needs reconsideration. Pooling operations have always received opposition from the users for it tends to make their problem of securing transportation equipment more difficult. Through wise planning you can eliminate many of these difficulties. With the probability of a severe shortage of equipment you should be thinking in advance of ways and means of making one vehicle do the work of two. Many of the operations now revolve about a pooled operation. Do your trouble cars operate three shifts. Can any of your gas and electric operations be performed jointly? Do you

have cars running extra mileage to justify keeping them out of the pool?

c. *Restricting use.* Have you any operations that were justified during peace times that cannot be justified during war time? Is every one in your company entitled to automotive transportation? Are you operating by the most direct route, is your dispatching service well thought out and what changes can you make to existing non-essential equipment to run it out on essential service?

Parts and Accessories

This general heading also suggests a number of sub-headings.

a. *The outlook for parts production* is so far not too discouraging but your general handling of this subject will materially affect the overall problem. Obviously a bulging storeroom is not the answer to any thing but your own selfish problem. The use of any procurement aid whether it be aid priorities or future rationing will hinge on cooperation in the distribution of a limited allotment of parts. Have you combed your present stocks for obsolescence? It may be the item someone is looking for. The bus operators now have a clearing house for bus parts and a committee is now in the process of formulation that will provide this service to the electric and gas utilities.

b. *Salvage.* It is now desirable to consider an old vehicle in light of its value in salvage parts as well as in trade-in allowance. Careful checking will reveal many possibilities for interchange of parts both as to make and model. Ancient vehicles may be profitably dismantled for their parts instead of trading or repairing. Rebuilding operations that were previously uneconomical may now be justified. All the new maintenance wrinkles of the past few years such as metal spraying, etc., need reconsideration. Close cooperation between manufacturer and dealer may make your useless salvage items useful.

c. *Tires* are perhaps one of the most important accessory items. Repairs and recapping to an extent previously uneconomical may be necessary in light of present rubber supply. New spares or spares with miles can be replaced with something just good enough to get the vehicle back to the garage.

General Considerations

There are other general considerations which should be given thought in advance of actually being faced with the actual problem. Are you doing enough training of lower grade employees to provide for replacements in view of the probably serious shortage in man power? Have you made every effort to eliminate accidents with their resulting repairs and consumption of parts? Can you extend your oil life through better care or reconditioning? Will lower octane gasoline materially effect your operations or can you regasket, re-time, etc., to keep going? Can you utilize personal authorizations so that employee vehicles can absorb some of your necessary mileage? Do you have a quantity of personal authorization mileage that can be eliminated? Are your company owned vehicles garaged closest to their working point and do they develop an appreciable amount of personal mileage? Where can convenience be forsaken as a contribution to conservation?

Your own well thought out answers to questions of this sort will be more to the point than advice from one not knowing the problems peculiar to your fleet.

Utility Representatives of Regional Committees of Central Transportation Committee

PUBLIC Utility Trucks will be an important factor in the defense program, and Interstate Commerce Commissioner John L. Rogers is heading up the Central Motor Transportation Committee, a part of the Transportation Division of the Advisory Commission to the Council of National Defense. The Motor Committee will formulate and execute plans for the efficient and economical use of highways and commercial vehicles.

Its members will cooperate with government agencies and those furnishing or using transportation facilities in promoting national defense, to assure sufficiency of commercial motor vehicles to meet the needs of National security.

Chairman Rogers has established sixteen regional committees to facilitate the work of the Central Motor Transportation Committee, and the utility representatives of the sixteen districts are shown below.

Utility motor transportation officials throughout the United States will be requested to contact their regional representatives who will exchange information on all forms of motor transportation shortages, congestions, delays in shipments, scarcity of parts and the effect of priorities affecting production of trucks, buses, and their repair parts. The War Department has also urged this committee to facilitate the completion of the recent Bus and Truck Census.

In this way the motor transportation branch of the utility industry can present a united front in its support of national defense.

Region 1	J. A. Herlihy	Edison Electric Light Co.	Boston
" 2	R. H. Clark	Consolidated Edison, Inc.	New York
" 3	Lynn Edsall	Philadelphia Electric Co.	Philadelphia
" 4	S. G. Page	Philadelphia Co.	Pittsburgh
" 5	Jean Y. Ray	Virginia Electric and Power Co.	Richmond
" 6	R. Whitfield	Georgia Power Co.	Atlanta
" 7	F. B. Penick	Southern Bell Telephone and Telegraph Co.	Nashville
" 8	G. D. Gilbert	Illinois Bell Telephone Co.	Chicago
" 9	G. E. Laughland	Northern States Power Co.	Minneapolis
" 10	R. J. Collins	Kansas City Power and Light Co.	Kansas City
" 11	S. M. Sharp	Southwestern Gas & Electric Co.	Shreveport
" 12	Ben Smith	Southwestern Bell Telephone Co.	San Antonio
" 13	F. T. Parks	Public Service Co.	Denver
" 14	B. A. Barickman	Mountain States Telephone and Telegraph	Billings
" 15	G. H. Keiburtz	Puget Sound Power & Light Co.	Seattle
" 16	P. H. Ducker	Southern California Edison Co.	Los Angeles

Winter Traffic Safety Report Now Available

"WINTER TRAFFIC SAFETY," the 1941 report of the National Safety Council's Committee on Winter Driving Hazards, a booklet of 22 pages, is now off the press and copies may be obtained from the National Safety Council, 20 North Wacker Drive, Chicago.

The report presents the findings and recommendations of the Committee after its past year of study. The winter driving problem and a balanced winter traffic safety program are outlined. This is the second comprehensive report of the Committee on Winter Driving Hazards. The first report entitled "Safe Winter Driving," was presented a year ago at the 29th National Safety Congress and Exposition. Reference should be made to both reports for a complete description of the findings and recommendations of the Committee.

Other committees of the Street and Highway Traffic Section also presented reports at the 30th National Safety Congress and Exposition. Reports of the following committees are available from the Council:

Committee on Speed Regulation.
Committee on Pedestrian Control and Protection.
Committee on Tests for Intoxication.
Committee on Public Education and Safety Organization.
Committee of Traffic Court Judges and Prosecutors.

Electric Wiring and the War Effort

By O. K. Coleman
Member, EEI Wiring Committee

ALL efforts today must be devoted in some degree to war activities. During these times almost all of the usual civilian construction must be deferred, and some will ask therefore why give any attention to wiring now. It should be recognized, however, that a large portion of the deferred work will be replaced by very urgent and necessary war and defense construction, and careful attention must be given to this construction in order to obtain the greatest accomplishment with a minimum amount of material.

The adoption and use of modern simplified wiring methods and materials for new work and additions to old work can be appropriately urged by electric utilities as well as by manufacturers, jobbers, contractors, inspectors—in fact, by all groups comprising the electrical industry—especially under present conditions when it is absolutely necessary to save every possible pound of critical material for direct use as materiel. By modern simplified wiring materials and methods is meant among other things: (1) the use of non-metallic sheathed cables—particularly those of the covered neutral type (CNX); and (2) the use of thin wall insulated cables and bare neutrals where conduit must be used on necessary construction projects. Similarly, non-metallic switch, outlet and junction boxes may well be used with non-metallic wiring systems.

The use of such materials and methods for wiring is highly desirable *at any time* from the standpoint of safely and effectively providing adequate wiring at economical costs. Under present emergency conditions, when conservation of strategic materials needed in the war effort is so vital, the use of these simplified methods and materials is an important contribution to the war effort, while the use of the conventional wiring materials, which require so much more steel, zinc and rubber, is a needless waste of such strategic materials.

The Case for "CNX"

In addition to making possible the conservation of vast quantities of vital materials for war production, the use of CNX has definite advantages to labor and to the contractor as well as for the general public.

For instance:

1—Labor's Share

There is no material difference in manhours of labor to install BX, Romex and CNX types of cables. Every unnecessary part of the wiring material eliminated will permit *labor to get that much larger proportion of the wiring dollar* and at the same time make the manhours count for more useful work. In CNX, all the steel and zinc and half of the rubber is eliminated, so the total expenditure for wiring goes for labor and *necessary* materials, thus making a more effective overall effort.

2—More Capacity

The use of CNX will actively provide more wiring capacity for a given amount of material. This will, in at least some cases on important necessary installations, eliminate the use of long and hazardous extension cords.

3—CNX is Safer to Use

Thousands of existing installations testify to safety of CNX. Sixteen million feet of CNX, enough to provide adequate wiring for 20,000 homes, installed over past six years have proven beyond question the safety and reliability of CNX.

Because of the concentric neutral construction of CNX positive identification of the grounded side of the circuit is assured, thus minimizing the hazard inherent in all other wiring systems where polarity may be reversed.

4—CNX Eliminates a Fire Hazard

Should a fault occur in the insulation of the "live" conductor, the uninsulated neutral of CNX provides a low resistance path to ground, thus allowing fuses or other protective devices to operate immediately. Thus the hazard of a "hot" sheath, common to metallicly enclosed systems, is eliminated.

Impressive Conservation of Scarce Materials Possible

The impressive potential savings in vital materials (steel, zinc and rubber) which can be accomplished by adoption of CNX for wiring, where it is suitable, were brought out in the article entitled "Conservation of Materials for Defense Wiring" in the November 1941 E.E.I. Bulletin.

Table I shows the quantities of strategic materials which could be saved by elimination of steel enclosed wiring systems to the greatest practicable extent and the use of CNX in lieu of all other wiring methods wherever it is suitable.

All of the 74,150 tons of steel and 600 tons of zinc could be conserved by the elimination of unnecessary metal enclosed wiring systems. In addition, and of real importance, 1,436 tons of rubber could be conserved by the use of CNX in lieu of other wiring methods.

The conservative estimates shown above are based on the minimum size wire, No. 14 AWG, and on two-conductor circuits, and would be increased (perhaps as much as 50 per cent) by the use of larger conductors and multi-wire circuits.

Governmental Agencies Interested in Conservation Possibilities

Those who have been interested heretofore in the efforts to modify interior wiring practices, and to introduce new materials and new methods, such as CNX, may also be interested in recent developments in this field among federal agencies concerned with interior wiring and those agencies dealing with the conservation of materials for the national defense program. These developments may have considerable local and regional importance because many of these Federal bodies, particularly the housing agencies, are prepared to recognize and use improved wiring methods where such methods are permitted by the local electrical inspection authority.

To sum up the situation, it may be said that the federal housing and defense agencies are quite generally impressed by the economies of the several proposals for modernizing interior wiring codes and local trade practices, and are satisfied with the technical integrity of the proposals, but they are not prepared to put on crusades for the reformation of local regulations and perhaps are not especially well equipped for such an effort. *This is basically a local matter in all local and regional areas, and in which the electric utilities can be helpful by placing their technical knowledge and experience at the services of those concerned with defense construction in their respective territories.*

Local Effort Necessary

In order to get the use of simplified materials started, individual effort to gain acceptance for these ideas will be

TABLE I—QUANTITIES OF VITAL MATERIALS
WHICH CAN BE RELEASED FOR DEFENSE USE BY CHANGE TO CNX WIRING

Wiring Method and Material Actually Used in 1940		*Savings Possible through Complete Substitution of CNX for Wiring Wherever Practical*		
Method	Material Million Circuit Feet 2-Conductor*	Steel	Rubber	Zinc
Armored Cable (BX)	370	31,450 tons	462 tons	300 tons
Non-metallic Sheathed Cable (Romex)	409	.....	512	...
Knob and Tube Systems	270	.....	337	...
Conduit Systems	100	42,600	125	300
Total Potential Savings	...	74,150 tons	1,436 tons	600 tons

* Based on 1940 Wiring where CNX would be safe and suitable.

required in each locality. The headquarters' staff of the governmental agency may be favorably disposed toward the use of these materials, but may not take the initiative in the local situation. If the individual utility will take the initiative and point out the *opportunities for conservation* to the people who carry direct responsibility in the local areas, such as representatives of FHA, Defense Housing authorities, etc., it seems probable that the headquarters' representatives will grant their approval for the use of simplified wiring materials. Local defense agencies may also be in a position to gain the cooperation of local wiring inspection authorities, many of whom, up to now, have not fully appreciated the merits of simplified wiring methods.

During the war, new housing permitted to be built will be largely limited to defense housing. Current estimates indicate that in the United States some 525,000 dwelling units of this type will be built in the 12 months ending June 30, 1942. Practically all of this housing, all additional residential and farm wiring, and even much small and necessary commercial wiring can best be done by the use of CNX wherever it is technically appropriate.

Manufacturers Who Can Supply CNX

Too much emphasis cannot be placed on the need to obtain approval of the use of the CNX early enough so that the cable can be ordered, since little of it is available except on order from the factory. There are approximately 15 manufacturers whose Covered Neutral Cable has been listed by the Underwriters' Laboratories. The list contains the names of most of the major wire manufacturers as well as many of the smaller manufacturers.

It is felt that the opportunity to make real progress toward general acceptance of the use of these simplified materials and methods has never been better. Such acceptance, if achieved now, will help assure the recognition of this most advantageous wiring development in the next revision of the National Electrical Code, which recognition will materially ease the way to further spreading of the benefits of more adequate wiring through the use of simplified materials and even of more importance will at this time contribute to the most important job of winning the war.

Union Electric Co. Elects New Officers

J. WESLEY McAFEE was elected president of Union Electric Company of Missouri at a meeting of the board of directors on December 6. Dr. William McClellan, president since 1939, was elected chairman of the board and Ralph E. Moody was elected vice-president in charge of operations. John A. Woodbridge, vice-president in charge of corporate affairs of Union Electric, was elected vice-president and general counsel. Edward T. Gushee, executive vice-president, has resigned.

Mr. McAfee was born in Oklahoma City and was graduated from the University of Missouri School of Law in 1926. He went to St. Louis in 1926 and first engaged in the practice of law with Holland, Rutledge & Lashley. From 1934 to 1937 he served as Circuit Judge and then joined the firm of Igoe, Carroll, Keefe and McAfee. As a member of this law firm, counsel for the utility company, Mr. McAfee has been intimately associated in the operations of Union Electric.

Before going to St. Louis as head of the Union Electric Co. Dr. McClellan was president of the Potomac Electric Power Company, Washington, D. C. Former connections included McClellan & Junkersfeld, Stone and Webster Engineering Corp. and Cleveland Electric Illuminating Co. He is a past-president of the A.I.E.E.

Mr. Moody has been an operating executive of utility companies in Wisconsin for 25 years. Following graduation from the University of Wisconsin, he began work as maintenance man for a predecessor company of the Wisconsin Electric Power Co., Milwaukee. He served successively as valuation engineer, assistant research engineer and research engineer. In 1929 he became executive assistant, later being made assistant to the president. In 1932 he was appointed vice-president and general manager of the Wisconsin Gas and Electric Co., and of the Wisconsin-Michigan Power Co., subsidiaries of Wisconsin Electric Power Co. In 1940 he became assistant to the president of the North American Company, with offices in New York, and early this year he was elected vice-president of that organization.

Frank D. Comerford

FRANK D. COMERFORD, president of the Boston Edison Company since 1935, and former president and chairman of the New England Power Association, died at Boston on November 24, after an illness of several weeks. Mr. Comerford was 48 years of age.

Born at Worcester, Mass., and educated at Holy Cross College and Harvard Law School, he was admitted to the bar in 1917. Eight years later he was promoted to a partnership in Ropes, Gray, Boyden & Perkins, Boston, and during the World War he was counsel to the Fuel Administrator for New England. In the Ropes, Gray offices he laid the legal groundwork for some of the larger organization and financing projects of the early 1920's, including the New England Power Association, which was organized in 1926.

In 1927, at the age of 34, Mr. Comerford became president of the association. Under his administration the association developed broadly as to plant expansion, service growth and public relations. The 15-mile Falls project on the Upper Connecticut, since named the Frank D. Comerford station, was built, and much other important system progress achieved. He became chairman of the NEPA board, serving until June, 1941.

Mr. Comerford was elected president of the Boston Edison Company in 1935 and in his leadership demonstrated a genius for timing in financial affairs which was of great benefit in the attainment of low interest rates on bonds issued. Major system improvements were inaugurated and the resources of the company dedicated to the defense program without stint, including far-reaching plant expansion and coordination of personnel and facilities for maximum public service.

MKB Programs Harmonized With War Needs

By H. L. Martin
Manager, Modern Kitchen Bureau

COOPERATIVE educational activity on the modern all-electric kitchen and its appliances will continue during 1942 through The Modern Kitchen Bureau in order to keep the idea of electrical living before the public, to retain present acceptance of electrical appliances, and to show how these appliances aid in protecting health, conserving labor and other vital necessities during the emergency period.

In line with curtailed production of appliances, the Bureau's national advertising and other materials will emphasize the "Save through Use" advantages of electrical appliances.

The Bureau will serve as a clearing house and spark-plug for ideas designed to cope with the times. It is looking, not only to the present, but also towards the time when civilian needs will again be paramount. Present activities will not only take care of today's needs, but will help keep alive that desire for the "more abundant life" which modern electrical kitchen equipment affords.

Electric Kitchen Activity

A "Kitchen Conservation Program" planned to help the homemaker to use her appliances properly, and to keep them operating at high efficiency, will be launched by the Bureau. Among the timely themes to be stressed in this program are: how to get the most out of appliances, how to save electricity by keeping appliances in good repair, and how to use appliances for the best food preservation and preparation, in order to prevent loss of healthful vitamins in food.

Three packages, each containing three different advertising campaign ideas in keeping with the times, together with suggestions for display pieces, billboards, posters, direct mail, radio commercials, etc., will be mailed to utilities during the year. This flexible material can be adapted to particular appliances in which the utility may be interested, and will help the utility to keep its advertising up to the minute.

"It Happened in the Kitchen," MKB's full color talking motion picture, will form the spearhead of the electric kitchen activities for many companies. This picture dramatizes the role of the all-electric kitchen in conserving labor, providing more healthful food, etc., and will help to keep alive in the public mind the story of what electric kitchens mean in better living, less drudgery and better nourished families.

A clip sheet of newspaper reader articles, packed with information on use of appliances, planning the kitchen for efficiency, why appliances should be repaired, and other useful data, will be issued at intervals through the year.

Nutrition and Electric Ranges

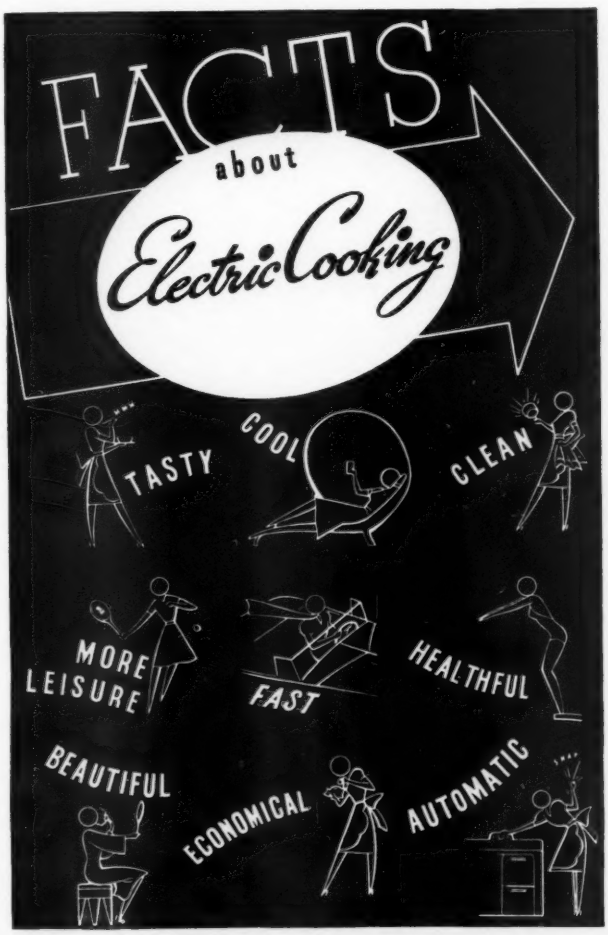
"Help Fulfill the Nation's Nutritive Needs" will be the theme of MKB's electric range program. America, awakened to the need for sound bodies and healthful food, has gone all-out for nutrition. Healthful electric cooking, that protects the vital food vitamins and minerals, has become an important cog in the defense program, and the Bureau's national advertising will stress this important story.

Vitamins, flavor and minerals, in the form of three new and sprightly characters, will appear in a continuous, year-round national advertising program. Each ad will carry the line: "In 1941 someone bought an electric range every 15 seconds."

The tentative advertising schedule calls for four insertions each in *Better Homes and Gardens, Good Housekeeping, McCall's* and *Woman's Home Companion,* so arranged that insertions will appear in every month of the year. The ads will occupy two columns, and be of the two-color type.

"Facts about Electric Cooking," a booklet filled with important information on increased nutrition through electric cooking, will be offered to consumers through these ads, and to utilities for resale. It tells the complete story at greater length than is possible in the advertisements.

A plan book explaining the Bureau's range activities, and offering mats of the artwork used in the national ads, with detailed suggestions for well-rounded local tie-ins with this effective advertising, will be distributed to utility merchandising executives. The flexibility and timeliness of this material will, it is felt, prove highly beneficial.



This booklet, filled with important information on increased nutrition through electric cooking, is offered to consumers by MKB national ads, and to utilities for resale.

Electric Water Heater Program

A "Three Plank Platform for Electric Water Heaters" in 1942 will be provided by the Bureau, to sustain interest in and desire for electric water heating, against the day when there will be more water heaters to sell.

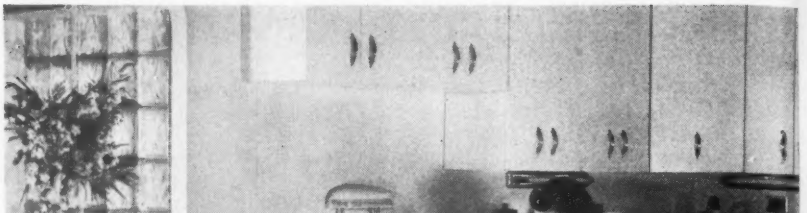
Three mailings of ideas for newspaper advertising, direct mail, bill stuffers, window displays, car cards, truck posters, etc., will supply timely ideas for electric water heater activity during the year.

MKB's utility over-all water heater competition will be continued in 1942, with the basis of judging the entries being changed to give less weight to immediate sales, and more weight to those factors which are helpful from the long-term viewpoint, such as the amount of dealer cooperation obtained.

Since explanation of the product's advantages is an important point in retaining recognition, there will be a window display competition.

Complete details of all three "planks" will be found in MKB's water heater plan book, to be distributed soon.

The Modern Kitchen Bureau is mobilized to help utility merchandising and advertising departments in every way possible during these trying days. We offer all-out effort for the defense of our country first, and then to the industry of which we are all proud to be a part.



How electric ranges provide more nutritious food is shown in this scene, and others, in MKB's full color talking motion picture, "It Happened in the Kitchen."

Full Color Talking Motion Picture Presented by Better Light-Better Sight Bureau

THE average American home's need of Better Light for Better Sight, with the difference between good and bad seeing conditions dramatized by use of the before and after technique to show a typical family's struggle for good light throughout their home, is presented in the Better Light-Better Sight Bureau's new full color talking motion picture, "Light Makes Sight."

This seeing story of the average American family illustrates the vital need for good light in helping to conserve precious eyesight and health that will play such an important part in the days ahead, and shows how and why modern lamps and fixtures provide Better Light.

Shows Typical Family's Day

Starting at dawn, the picture takes the Walters family—Mr. and Mrs. Walters, 16-year-old Becky and 12-year-old Donald—through a day's adventures in seeing. Mr. Walters finds that inadequate light hampers his work in the office; Mrs. Walters works amid alternate glare and shadow in her kitchen; while Becky, taking photographs in the park, meets a blind man, who makes her think of the beauty and importance of the visible world.

Dr. Jim Rutherford, an eyesight specialist, is a dinner guest of the Walters, and immediately notices the bad lighting in their dining room. Unshaded bulbs of inadequate size create improper seeing conditions that result in discolored food, squinting and ducking of heads.

In the living room, Donald lies on the floor, Becky on the sofa, each trying to get enough light from a single table lamp. Mr. Walters is hunched over his paper, beside an old-fashioned floor lamp.

Bad light is harmful to the eyes, Dr. Jim explains, and demonstrates how each member of the family receives improper and insufficient light, with the aid of a light meter. The eye muscles must travel miles in reading a book, he says, and consequently they must have good light, without glare and without shadows.

As Dr. Jim leaves, Mr. Walters steps on one of Donald's roller skates, and Mrs. Walters decides that she must have good light in every room.

Better Light Appears

A call to the electric company brings a home lighting adviser who analyzes the problem. Next, Mrs. Walters is shown in a lamp store, selecting the fixtures she needs to put the adviser's recommendations into effect. Ceiling fixtures for kitchen and living room, and IES bridge, floor and study lamps are shown, and the sight protection they afford is explained.

The camera shifts back to the Walters home, with the new equipment in place, and the narrator sums up the change for the audience: "Good seeing for her now, in the vital places where she needs it most. No glaring lamp bulbs. Instead, a distributed glow in the room where she spends so much of her time; a better meal-time with better meals. Food looks

(*Continued on page* 504)

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B. M. LESTER, Oklahoma Gas & Electric Co., Oklahoma City, Okla.

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W. P. MCARDLE, Ebasco Services Inc., New York, N. Y.

L. A. MAYO, The Connecticut Light & Power Co., Hartford, Conn.

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A. H. SCHETTLER, Union Electric Co. of Missouri, St. Louis, Mo.

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L. R. NASH, 155 Main St., Ridgefield, Conn.

M. R. SCHARFF, 285 Madison Ave., New York, N. Y.

W. H. WILLIAMS, Public Service Co. of New Hampshire, Manchester, N. H.

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J. E. MOORE, Ebasco Services, Inc., New York, N. Y.

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W. H. WILLIAMS, Public Service Co. of New Hampshire, Manchester, N. H.

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S. H. CADY, Rochester Gas & Electric Corp., Rochester, N. Y.
F. W. COOPER, Public Service Electric & Gas Co., Newark, N. J.
K. B. CRUMB, American Gas & Electric Service Corp., New York, N. Y.
A. L. DAVIES, West Penn Power Co., Pittsburgh, Pa.
J. U. DIEHL, Pennsylvania Water & Power Co., Baltimore, Md.
W. H. EBBECKE, The United Gas Improvement Corp., Philadelphia, Pa.
H. W. ENDRES, American Gas & Electric Service Corp., New York, N. Y.
S. L. FERGUSON, The Detroit Edison Co., Detroit, Mich.
P. O. JOHNSON, Northern States Power Co., Minneapolis, Minn.
A. J. KIEFFER, Louisville Gas & Electric Co., Louisville, Ky.
A. A. LIPSCHUTZ, Philadelphia Electric Co., Philadelphia, Pa.
J. W. MACKIE, Delaware Power & Light Co., Wilmington, Del.
L. C. PURSELL, Pennsylvania Power & Light Co., Allentown, Pa.
H. J. RUSTAD, Duquesne Light Co., Pittsburgh, Pa.
A. H. SCHETTLER, Union Electric Co. of Missouri, St. Louis, Mo.
A. V. SCHWARTZ, Columbia Engineering Corp., Cincinnati, Ohio.
S. M. SMALLPAGE, New Orleans Public Service Inc., New Orleans, La.
A. D. SMITH, Utah Power & Light Co., Salt Lake City, Utah.
R. F. STUMPF, Madison Gas & Electric Co., Madison, Wis.
J. L. SUNDAY, Philadelphia Electric Co., Philadelphia, Pa.
G. T. SWISHER, The Potomac Edison Co., Frederick, Md.

Guest Member
GEORGE VESSELAGO, Day & Zimmermann, Inc., Philadelphia, Pa.

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R. W. SEIPEL, Texas Electric Service Co., Fort Worth, Texas.
Chas. E. Steele, Kansas City Power & Light Co., Kansas City, Mo.
CARL H. ZURNIEDEN, Philadelphia Electric Co., Philadelphia, Pa.

Joint Subcommittee on Development and Research Meeting

THE Joint Subcommittee on Development and Research met with its Project Committees on Dec. 5 in New York, with Mr. A. B. Clark presiding. This was the first meeting since the Project Committee organization was simplified by consolidating the former Project Committees 1A—Noise Induction, and 1B—Noise Evaluation, and also Project Committees 2J—Low-Frequency Influence and Susceptiveness and 2K—Coupling. This action resulted in a reduction in the number of project committees from five to three, and was taken so that under present conditions attention might be concentrated most effectively on a few items of major importance.

The three new project committees are:

Project Committee 1—Noise Frequency Induction
Project Committee 2—Protection and Structural Coordination
Project Committee 3—Low Frequency Induction

As indicated by the titles, these three committees cover the three main divisions of the coordination problem as it affects power and telephone companies. The scope of each of the three committees includes studies of both power and telephone system characteristics of importance to the problem.

Each committee presented a progress report covering the work of the last six months. In addition, Project Committee 3 presented a report entitled "Low-Frequency Induction from Normal Load Currents of Power Distribution Feeders with Multi-Grounded Neutral Wire." This report gives the results of a survey of low-frequency induction in telephone circuits produced by normal load currents in paralleling multi-grounded neutral power distribution feeders of the 12 kv class. The survey was undertaken because of the rapidly increasing use of this type of power circuit, especially the rural single-phase multi-grounded neutral type, and the more or less coincident increase in the use on telephone lines of certain types of ground-return signaling such as composited or simplex dialing. Since normal load induction may interfere with ground-return signaling circuits, data regarding its probable magnitude are needed in connection with the development and application of such signaling circuits in order that, where necessary, features may be incorporated to limit their susceptiveness.

The observations were made between March, 1940, and May, 1941, and findings obtained from 33 exposure situations are given. The principal data presented relate to the maximum voltage recorded from each exposure situation and to average daily distribution of the induction. Some data on average connected transformer capacity in kva per mile of power line and its ratio to the maximum load of the line are also included. Means for estimating earth currents and resulting induction due to normal loads are given in two appendices.

This report was recommended by the Project Committee for issuance as a Provisional Report. Announcement will be made in the Bulletin when this recommendation is acted on by the Joint Committee on Plant Coordination.

J. E. Lynch

J. E. LYNCH, vice-president and general sales manager of Minnesota Power & Light Company, died December 4 following a three weeks' illness. He was 52 years old.

Mr. Lynch had been associated with the Minnesota Power & Light Company since July, 1928, when he was appointed assistant general sales manager. In 1931 he was promoted to general sales manager, in 1935 he was elected a director and in 1936 was named a vice-president.

Mr. Lynch began his business career with Stone & Webster Engineering Corporation, Boston, being engaged on several large construction projects in various parts of the country. Later he became general manager of Page & Hill Company, Minneapolis, remaining in that capacity until he became connected with Minnesota Power & Light Company.

Mr. Lynch also attained a reputation in the invention of certain mechanical devices, including an electric water heater and a treating process for prolonging life of telephone and telegraph poles. He was a veteran of World War I, serving as an officer in the Engineering Corps overseas.

Cooperation in Serving Defense Loads

(*Continued from page* 494)

lieve to be the most important one, is the building up of existing industries. The existing industries are your present customers and the present taxpayers of your communities. Anything that can be done to help their profit position will be a real help to your community.

Broader spread of sub-contracting through the Division of Contract Distribution or other agencies may well be a real start along these lines. These industries can be helped by furnishing them with ideas for modernization; by assisting them in selection of adaptable equipment to give them diversity of product; and by assisting them in proper plant and equipment layout to cut production costs. We may also be able to help our existing industries by locating markets for their products or for their waste materials.

In summary, utility Industrial Sales Deparments are faced with the four-fold task of: analyzing conditions in a rapidly changing world; recognizing the major problems of industry and the company; evaluating their functions anew on the basis of the ability of these functions to solve the problems; and of designing a sales plan embodying activities suitable to carry out those selected functions which are most necessary and useful *now*.

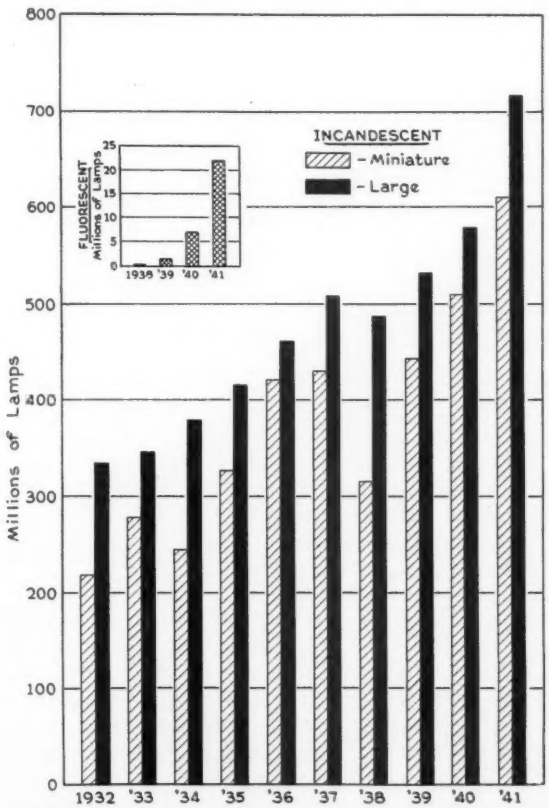
Truly, this is not an easy task, but its difficulty is not out of proportion to its importance. Our Industrial customers are, themselves, engaged in the most stupendous job of production of all time—turning out the materials necessary to arm the free peoples of the world. No effort which we can expend in helping to solve their production problems can be too great and we can be sure that in helping to solve their problems we have gone a long way in solving our own company problems; and in an even larger sense—we are proving that Utilities Serve America!

More Than 1-1/3 Billion Lamps Sold in 1941

MORE than one and a third billion lamp bulbs, a new record, were sold in the United States during 1941, it is reported in the General Electric Review. The estimated total of 1,350,000,000 included 718,000,000 large and 610,000,000 miniature incandescent lamps, and 22,000,000 fluorescent lamps. Miniature lamps include automobile, flashlight, and similar lamps.

While the lamp sales for 1941 showed a substantial increase over 1940 —235,000,000 lamps—the real significance was not in the numerical increase but in the fact that the demand for 200- to 1500-watt lamps increased 16 per cent while that for the lower-wattage lamps (7½ to 150 watts) gained only six per cent.

The fluorescent lamp appeared commercially less than four years ago. Sales in 1938 amounted to 200,000 units, in 1939 to 1,600,000, and in 1940 to 7,000,000 units. The 22,000,000 figure of 1941 more than tripled the 1940 total.



Incandescent lamp sales in the United States for the past ten years (1941 Estimated)

PERSONALS

WILLIAM E. MITCHELL, vice-president and general manager of the Georgia Power Co., has been named chairman of the utilities division of the Greater Atlanta Defense Council, a group which has been charged with facilitating the city's defense in case of war. B. R. CHESTNEY, vice-president of the company, and manager of the Macon division, has been selected to head a utilities group which will serve as a subcommittee of the Macon Civilian Defense Council.

C. ALLEN CLIFT, manager for the Arkansas Power and Light Company at England, Ark., since 1937, has been transferred to a similar position at Camden, succeeding the late John Fitzgerald. Mr. Clift has been connected with the company since 1926.

C. T. BRASFIELD of Birmingham, Ala., has been promoted to the position of assistant to the operating vice-president of the Alabama Power Company. Together with his new duties, Mr. Brasfield will continue to supervise appliance service work throughout the system.

DOUGLAS C. STEWART, safety department manager for Buffalo, Niagara and Eastern Power Corp., has been appointed safety supervisor for the Niagara Hudson system. Mr. Stewart will supervise and coordinate safety activities in the three operating divisions of the system.

ALFRED M. WADE, former supervisor of sales promotion of the Connecticut Light and Power Company, has succeeded A. Y. WARNER as manager of the Rockville-Stafford district of the company. Mr. Warner resigned to join the Capewell Manufacturing Company in Hartford. Mr. Wade is a graduate of Union College in Schenectady, New York. In 1923 he became advertising manager of the Adirondack Power and Light Company and joined the Connecticut Light and Power Company sales department in 1924. In 1928 Mr. Wade left the Connecticut Light and Power Company to accept a position with General Motors, returning in 1934 to the sales department of C. L. & P. Co.

CONVENTIONS AND MEETINGS

DECEMBER

1-2	Prime Movers Committee, EEI Headquarters, New York, N. Y.
1-5	American Society of Mechanical Engineers, New York, N. Y.

1942

JANUARY

21-23	American Society of Civil Engineers, New York, N. Y.
26-30	American Institute of Electrical Engineers, New York, N. Y.
26-30	American Society of Heating and Ventilating Engineers, Philadelphia, Pa.

FEBRUARY

2-3	Electrical Equipment Committee, EEI, Pittsburgh, Pa.
9-11	Transmission and Distribution Committee, EEI, Hotel Cleveland, Cleveland, Ohio.
16-20	National Electrical Manufacturers Association, Palmer House, Chicago, Ill.

APRIL

27-30	Chamber of Commerce of the U. S. A., Washington, D. C.

MAY

6-8	Electrical Manufacturers Club, The Homestead, Hot Springs, Va.
10-15	National Electrical Manufacturers Association, The Homestead, Hot Springs, Va.
11-15	National Fire Protection Association, Atlantic City, N. J.
17-21	National Electrical Wholesalers Association, The Homestead, Hot Springs, Va.
22-26	Westinghouse Agent-Jobbers Association, The Homestead, Hot Springs, Va.
25-28	National Association of Purchasing Agents, New York, N. Y.

JUNE

1-4	EDISON ELECTRIC INSTITUTE, annual convention, Atlantic City, N. J.

ROBERT S. BOSTWICK, formerly assistant manager of the St. Augustine office of the Florida Power and Light Co., has been named manager of the Titusville office of the company. Mr. Bostwick has been with the company for about eight years.

J. H. GRANT, advertising and publicity director of the Houston Lighting and Power Co., Houston, Tex., has been elected to a vice-presidency in the company. In his new position, Mr. Grant continues to direct the utility's advertising and publicity work and takes charge of insurance matters and employee relations.

Better Light-Better Sight Motion Picture

(*Continued from page* 500)

appetizing. Yes, the Walters have taken a step forward. A change has taken place here—a change for the better."

Succeeding scenes show the family in the living and dining rooms, now enjoying Better Light, with flash-backs to show the family in the old set-up with strained faces and in uncomfortable positions.

The final scene is a shot of a large city, at night with its myriad of lights, and the narrator concludes: "Millions of eyes doing the work of America. Your eyes, mine, the eyes of your family. As you grow older, you will have more demands on your greatest heritage. Conserve them now! Give them light! For Light makes Sight!"

This full color talking motion picture will be ideal for showings at all types of club and group meetings, parent-teacher associations, schools, chambers of commerce, and other groups. It can be shown on any one of the thousands of 16 mm. projectors now in use in schools, churches, etc.

With material for the manufacture of appliances already curtailed, and likely, within the next few months to be cut still further, utilities are depending more and more on lighting to maintain their domestic loads. This film is a strong ally in the fight to continue a normal, well-balanced growth. Energetic educational efforts will keep the public informed of the desirability of higher levels of illumination, and will help to preserve the national health which will be so vital in the days ahead.

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1941-1942

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Customers' Relations, Commercial Accounting and Collections, H. R. FLANEGAN, Philadelphia Electric Co., Philadelphia, Pa.

Depreciation, H. L. GRUEHN, Consolidated Gas Electric Light & Power Co., Baltimore, Md.

General Accounting, to be announced.

Plant Accounting and Records, H. B. HARDWICK, The Commonwealth & Southern Corp., New York, N. Y.

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Membership, EDWARD REYNOLDS, Columbia Gas & Electric Corp., New York, N. Y.

Prime Movers, J. A. KEETH, Kansas City Power & Light Co., Kansas City, Mo.

Prize Awards, H. P. LIVERSIDGE, Philadelphia Electric Co., Philadelphia, Pa.

Rate Research, F. A. NEWTON, The Commonwealth & Southern Corp., New York, N. Y.

General Sales, R. E. FISHER, Pacific Gas & Electric Co., San Francisco, Cal.

Statistical, W. G. BOURNE, JR., The Commonwealth & Southern Corp., New York, N. Y.

Transmission and Distribution, E. V. SAYLES, The Commonwealth & Southern Corp., Jackson, Mich

Codes and Standards (a Subcommittee of the Operating Committee)
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EDISON ELECTRIC INSTITUTE

1941-1942

(*Terms expiring* 1942)

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(*Terms expiring* 1943)

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(Terms expiring 1944)

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W. J. HAGENAH.....Public Utility Engineering & Service Corp., Chicago, Ill.
EDWARD REYNOLDS.....Columbia Gas & Electric Corporation, New York, N. Y.
A. H. SCHOELLKOPF.....Niagara Hudson Power Corporation, New York, N. Y.
E. W. WAKELEE.....Public Service Corporation of New Jersey, Newark, N. J.